The art of perfumery and the methods of obtaining the ...

George William Septimus Piesse

KG 8.4.50

HARVARD COLLEGE LIBRARY

THE

ART OF PERFUMERY.

VALUABLE BOOKS

FOR

DRUGGISTS, CHEMISTS, &c.

OTT ON THE ART OF MANUFACTURING SOAPS AND CANDLES. Including the most Recent Discoveries, and embracing all kinds of Ordinary, Hard, Soft, and Toilet Soaps, especially those made by the Cold Process, and the modes of detecting frauds in the manufacturing and the making of Tallow and Composite Candles. By Adolph Ott, Dr. Ph., Practical and Analytical Chemist. With numerous Illustrations. Price, $2 50

COOLEY'S TOILET AND COSMETIC ARTS. The Toilet and Cosmetic Arts, in Ancient and Modern Times. With a Review of the Different Theories of Beauty and copious allied Information, Social, Hygienic, and Medical, including Instructions and Cautions respecting the selection and use of Perfumes, Cosmetics, and other Toilet Articles; and a *Comprehensive Collection of Formulæ*, and Directions for their Preparation. By Arnold J. Cooley, Author of "Cyclopædia of Receipts, Processes, Data, and Collateral Information, &c., in the Arts and Manufactures." One Volume, thick Demy Octavo. Price, $5 00

MORFIT'S CHEMICAL AND PHARMACEUTICAL MANIPULATIONS. A Manual of the Mechanical and Chemico-Mechanical Operations of the Laboratory, for the use of Chemists, Druggists, Manufacturers, &c. A Second and much enlarged Edition. By Campbell Morfit, Professor of Analytic and Applied Chemistry in the University of Maryland; assisted by Clarence Morfit, Assistant Melter and Refiner in the United States Assay Office. With 500 Illustrations. Octavo, Leather. Price, $5 00

WETHERILL ON THE MANUFACTURE OF VINEGAR, Theoretical and Practical, with especial Reference to the Quick Process. With Rules for Testing its Purity, &c. &c., and Illustrations. By Charles M. Wetherill, M.D. Price, $1 50

BRANSTON'S HANDBOOK OF PRACTICAL RECEIPTS OF EVERYDAY USE. A Manual for the Chemist, Druggist, Manufacturer, &c. By Thomas F. Branston. Price, $1 50

BEASLEY'S DRUGGISTS' GENERAL RECEIPT BOOK. Fifth American Edition. Price, $3 50

THE

ART OF PERFUMERY,

AND THE METHODS OF OBTAINING

THE ODORS OF PLANTS,

WITH INSTRUCTIONS FOR THE MANUFACTURE OF

PERFUMES FOR THE HANDKERCHIEF, SCENTED POWDERS,
ODOROUS VINEGARS, DENTIFRICES, POMATUMS,
COSMETICS, PERFUMED SOAP, ETC.

TO WHICH IS ADDED AN APPENDIX ON PREPARING

ARTIFICIAL FRUIT-ESSENCES, ETC.

BY

G. W. SEPTIMUS PIESSE,
ANALYTICAL CHEMIST,
AUTHOR OF "CHEMICAL, NATURAL, AND PHYSICAL MAGIC," "THE LABORATORY OF CHEMICAL WONDERS," ETC.

Second American from the Third London Edition.

PHILADELPHIA:
LINDSAY & BLAKISTON.
1867.

KE 8450

HARVARD
COLLEGE
LIBRARY
046*91

SHERMAN & CO., PRINTERS.

CONTENTS.

PAGE
Preface, ... ix

SECTION I.

Introduction and History, ... 13–33

SECTION II.

Theory of Odors, ... 34–50

SECTION III.

Flower-farming statistics, ... 51–63

SECTION IV.

Expression, Distillation, Absorption, Enfleurage, Maceration, ... 64–72

SECTION V.

Primitive Odors, ... 73–179
The Commercial Element, ... 180–181

SECTION VI.

Perfumery of Animal Origin, ... 182–203

SECTION VII.

Smelling Salts, Snuff, and Vinegars, ... 204–215

SECTION VIII.

Bouquets and Nosegays, ... 216–239

PAGE

SECTION IX.

SACHET POWDERS AND INCENSE, ... 240–261

SECTION X.

PERFUMED SOAPS, ... 262–282

SECTION XI.

EMULSINE AND JELLIES, ... 283–288

SECTION XII.

MILKS AND EMULSIONS, ... 289–294

SECTION XIII.

COLD CREAM AND LIP SALVE, ... 295–302

SECTION XIV.

POMADES AND OILS, ... 303–317

SECTION XV.

HAIR DYES AND DEPILATORY, ... 318–331

SECTION XVI.

POWDERS AND ROUGE, ... 332–342

SECTION XVII.

TOOTH POWDERS AND MOUTH-WASHES, ... 343–350

SECTION XVIII.

HAIR-WASHES AND BANDOLINE, ... 351–356

SECTION XIX.

COLORING SUBSTANCES, ... 357–366

APPENDIX, ... 367–391
INDEX, ... 393–401

LIST OF ILLUSTRATIONS.

PAGE

The Gamut of Odors, ... 42

Pipette, to draw off small Portions of Otto from Water, ... 65

Tap Funnel, for Separating Ottos from Waters, and Spirits from Oil, ... 66

Syphon Still, ... 68

The Almond, ... 75

Styrax Benzoin, ... 81

The Clove, ... 94

The Orange, ... 125

The Patchouly Plant, ... 135

Santal-wood, ... 157

Vanilla Plant, ... 166

Vitivert, ... 172

Civet Cat, ... 186

Musk-pod, ... 190

Musk Deer, ... 198

Drying-House, ... 242

The Censer, ... 253

Perfume Lamp, ... 258

Slab Soap Gauge, ... 267

Barring Gauge, ... 267

Squaring Gauge, ... 268

Soap Scoops, ... 268

Soap Press, ... 269

Moulds, ... 269

Soap Plane, ... 274

Oil Runner, ... 284

PREFACE TO THE THIRD EDITION.

By universal consent the physical faculties of man have been divided into five senses,—seeing, hearing, touching, tasting, and smelling. It is of matter pertaining to the last-mentioned faculty that this book mainly treats. . Of the five senses, that of smelling is the least valued, and, as a consequence, is the least tutored; but from this, our own act, we must not conclude that it is of insignificant importance to our welfare and happiness.

By neglecting to tutor the sense of smelling, we are constantly led to breathe impure air, and thus poison the body by neglecting the warning given at the gate of the lungs. Persons who use perfumes are more sensitive to the presence of a vitiated atmosphere than those who consider the faculty of smelling as an almost useless gift.

In the early ages of the world perfumes were constantly used, and they had the high sanction of Scriptural authority.

The patrons of perfumery have always been considered the most civilized and refined people in the world. If refinement consists in knowing how to enjoy the faculties which we possess, then must we learn not only how to appreciate the harmony of color and form, in order to please the sight; the melody of sweet sounds, to delight the ear; the comfort of appropriate fabrics, to cover the body, and to please the touch; but the smelling faculty must be shown how to gratify itself with the odoriferous products of the garden and the forest.

Pathologically considered, the use of perfumes is in the highest degree prophylactic; the refreshing feeling imparted by the citrine odors to an invalid is well known. The occasional sacrifice of incense in the fever chamber will prevent infection. The odors of plants are all antiseptic.

The commercial value of flowers is of no mean importance to the wealth of nations. But, vast as is the consumption of perfumes by the people under the rule of the British Empire, little has been done in England, either at home or in her tropical colonies, towards the establishment of flower-farms, or the production of the raw odorous substances in demand by the manufacturing perfumers of Britain; consequently, nearly the whole are the produce of foreign countries.

The climate of some of the British colonies especially fits them for the production of odors from flowers that require elevated temperature to bring them to perfection.

But for the lamented death of Mr. Charles Piesse,* Colonial Secretary for Western Australia, flower-farms would doubtless have been established in that colony long ere the publication of this work. Though thus personally frustrated in adapting a new and useful description of labor to British enterprise, I am no less sanguine of the final results in other hands.

Horticulturists being generally unacquainted with the methods of economizing the scents from the flowers they cultivate, entirely lose what would otherwise be a profitable source of income. For many ages the Cornish miners, while working the tin streams, threw the copper ore over the cliffs into the sea; how much wealth was thus cast away by ignorance, we know not; but there is a perfect parallel between the old miners and the modern gardeners.

For more than a century prior to the Victorian era, perfumes were out of favor in England; the people were of the idea of Socrates, who objected to the use of perfumery altogether. In these modern days, however, civilization has revived, and there is restored with it one of its concomitants. It is mentioned in "Chambers's Cyclopædia," published in 1740, that perfumes were disused here (in England), but were *à la mode* in Italy and Spain.

---

* Brother of the author.

In 1822 the first book devoted to this subject appeared in our language; it was the work of Charles Lilly, edited by Colvin Mackenzie. Mr. Lilly is described as "that celebrated perfumer at the corner of Beaufort Buildings, in the Strand," and who was spoken of in the *Spectator*, *Tatler*, and *Guardian*. Now, judging this work to represent the knowledge of the art of perfumery in this country at that period, it must be admitted that it was very imperfect: a century of neglect had done its work, and the art had been lost.

Five-and-twenty years elapsed, and the whole commerce of England began to show considerable vitality, —the founding of the Australian colonies, the discovery of gold in California and in Australia, the introduction of railways, the application of steam to shipping, and other causes, has produced a great increase in our commerce. Amongst other things the export of perfumery has increased.

In Italy, Sardinia, Sicily, and Southern France, some half-dozen flowers—jasmine, rose, acacia, orange, bergamot, tuberose, and violet—are extensively grown for perfumery, and are now easily imported for manufacture into England. Tropical produce, together with musk, ambergris, castor, and other raw materials for the perfumer's laboratory, comes to the British market before it reaches Continental cities. There is, therefore, no natural reason why the perfumery trade should not take the highest position in this country; even if it does not exceed that of Germany and France, it might at least equal it.

Transparent soap was the invention of an Englishman, yet he is still prevented from reaping the benefit of his valuable invention by the excise duty on the spirit which is necessary for its manufacture; the consequence is that German and American transparent soap is imported into England to the detriment of our trade. I do not view these excise duties on trade products as affecting the individual manufacturer, because it is admitted that the individual must suffer for the multitude; but in consequence of these excise duties the source of revenue (commerce). is withered in the germ. It is true that under "certain regulations" perfumers can "export" scented spirit free from duty, but the expenses incurred to do so are so great that they all but equal the benefit derived. Still the English perfumery trade is rapidly advancing, and finding favor from Brazil to New York, from Australia to India and Russia. I think I am justified in saying this favor is not ill bestowed, for England now produces the finest perfumery in the world.

If this work has contributed in any measure to raise the manufacture of perfumery in England to its present mercantile importance my labors have not been in vain; and I am happy in thus adding to the industrial resources of my country.

The exportation of perfumery has exactly doubled in value since the date of the first edition of this work, and this, too, in spite of the almost prohibitory tariff levied by our Indian Government, and the cessation of trade with the two Americas.

To my German translator, and to my American reprinters, I commend the present edition.

G. W. SEPTIMUS PIESSE.

THE ART OF PERFUMERY.

INTRODUCTION AND HISTORY.

SECTION I.

By Nature's swift and secret working hand
The garden glows, and fills the liberal air
With lavish odors.
There let me draw
Ethereal soul, there drink reviving gales,
Profusely breathing from the spicy groves
And vales of fragrance. THOMSON.

AMONG the numerous gratifications derived from the cultivation of flowers, that of rearing them for the sake of their perfumes stands pre-eminent. It is proved from the oldest records, that perfumes have been in use from the earliest periods. The origin of this, like that of many other arts, is lost in the depth of its antiquity; though it had its rise, no doubt, in religious observances. Among the nations of antiquity, an offering of perfumes was regarded as a token of the most profound respect and homage. Incense, or Frankincense, which exudes by incision and dries as a gum, from *Arbor thurifera*, was formerly burned in the temples of all religions, in honor of the divinities that were there adored. Many of the primitive Christians were put to death because they would not offer incense to idols:

The origin of perfumery Pliny traces to the East; and his opinion is fully borne out by the inspired writers, whose frequent allusions to perfumes and aromatics prove the very early and extensive employment of the luxury by nations in whose land flourish the aloe, cinnamon, sandal-wood, camphor, nutmeg, and cloves; the incense tree which it was the sacred privilege of the Sabæi to gather, the balsam trees, the sorrowful nyctenthes which pours forth its rich odors in the twilight, the Nilica in whose blossoms the bees are said to hum themselves to sleep, and the sweet Elcaya; these, and a forest of others, are the property of the East, and for ages were disregarded by the rest of the world. Homer but twice alludes to anything of the sort being in use among the Greeks; and centuries after the Jews had been commanded to make incense, the Athenians were forbidden by Solon to use perfumery. Among the Lacedæmonians, the luxury was always discountenanced, and perfumers were expelled the city as wasters of oil, upon the same principle that they dismissed all who dyed wool because they destroyed its whiteness. In Athens the case was different: in spite of Solon's prohibition a taste for perfumery grew apace, and its indulgence was brought to a higher pitch of refinement than it has ever enjoyed before or since. Though the East supplied the Athenians with the most valued gums and ointments, they added largely to the stock of fragrant plants already in use. Apollonius, of Herophila, wrote a treatise on perfume: "The iris," he says, "is best at Elis, and at Cyzicus; perfume from roses is most excellent at Phasalis, Naples, and Capua; that made from crocuses is in highest perfection at Soli, in Cilicia, and at Rhodes; the essence of spikenard is best at Tanius; the extract of vine-leaves at Cyprus, and at Adramyttium; the best perfume from marjoram and from apples comes from Cos; Egypt bears the palm for its essence of Cypirus, and the next best is the Cyprian and Phœnician, and after them comes the Sidonian; the perfume called Panathenaicum is made at Athens; and those called Metopian and Mendesian are prepared with the greatest skill in Egypt." Still the superior excellence of each perfume is owing to the purveyors, and the materials, and the artists, and not to the place itself.

The boxes in which the unguents were carried were generally made of alabaster, highly ornamented, and must have formed an expensive item in the jeweller's bill. But if we may believe a passage in the *Settler* of Alexis, even this extravagance has been exceeded:

> For he t' anoint himself
> Dipped not his finger into alabaster,
> The vulgar practice of a former age;
> But he let fly four doves, with unguents drenched,
> Not of one sort, but every bird a perfume bore
> Peculiar, and differing from the rest;
> And they hov'ring around us, from their heavy wings
> Showered their sweets upon our robes and furniture.
> And I—be not too envious, gentlemen—
> I was myself bedewed with violet odors!

The room in which an entertainment was given was always perfumed, either by burning incense or sprinkling the furniture with scented waters—an unnecessary measure, when we consider the lavish manner in which the guests were anointed. Each portion of the body had its appropriate oil or essence. Mint was recommended for the arms; palm-oil for the jaws and breast; the eyebrows and hair were anointed with an unguent extracted from marjoram; the knees and neck with the essence of ground ivy. This last was beneficial at drinking parties, as also was the perfume obtained from roses; the quince yielded an essence suitable to the lethargic and dyspeptic; the perfume extracted from vine-leaves kept the mind clear, and that from white violets was good for digestion.

The fashion of anointing the head at banquets is said to have arisen from an idea that the heating effects of wine would be better borne when the head was wet, just as a patient who labors under a burning fever is relieved by the application of a lotion. Aristotle proved that his habits of observation had led him to a different and truer conclusion, when he attributed the frequent occurrence of gray hair to the drying nature of the spices employed in the unguents. Nor did he stand alone in condemning their excessive use. It was not without a meaning that Sophocles represented Venus, the goddess of pleasure, perfumed, and looking in a mirror; and

Minerva, goddess of intellect and virtue, as using oil and gymnastic exercises. Chrysippus sought in the derivation of the word an objection to the luxury; but the attempt was so far-fetched as fairly to expose him to the satire of an ancient wit, that "if there were no physicians, there would be nothing in the world so stupid as grammarians."

Socrates disapproved of all perfumes. "There is the same smell," he said, "in a slave and a gentleman, when both are perfumed;" a remark that made little impression upon his pupil Æschines, who turned perfumer, fell into debt, and attempted to borrow money upon the strength of his business. Alexander the Great was more attentive to the rebuke of his tutor, Leonides, for his wasteful expenditure of incense in his sacrifices. "It would be time for him," his master told him, "so to worship when he had conquered the countries that produced the frankincense." The king remembered the lesson; and when he had taken possession of Arabia, he despatched a cargo of frankincense and myrrh to his old tutor.

From Greece perfumes quickly made their way to Rome; and although their sale was at first strictly prohibited, their employment became more and more extravagant, until even the eagles and standards were thought unfit to face the barbarian hosts of Northern Europe unless they had been duly anointed before battle; and should the engagement have proved successful, the ceremony was repeated. Such was the demand for the luxury, that the chief street of Capua was occupied solely by perfumers. The incense burnt by Nero upon the funeral pyre of his wife Poppœa, exceeded the annual production of spices in Arabia. At a rather earlier period, Platuius Plancus, when proscribed by the triumvirs, was betrayed by his perfumes. His place of concealment got wind, and discovered him to his pursuers.*

It is time that we leave these classic scenes, passing over the perfumed gloves and fatal caskets prepared by René, the chemist, astrologer, and perfumer, for the use of his mistress, Catherine de Medicis.

Describing the spectacles and Amphitheatre at Rome, Gibbon† observes, "the air of the Amphitheatre was continually refreshed by the playing of fountains, and profusely impregnated by the grateful scent of aromatics."

---

* Fraser's Magazine.

† Vol. ii, chap. xii, p. 104.

In the Romish Church incense is used in many ceremonies, and particularly at the solemn funerals of the hierarchy, and other personages of exalted rank.

Pliny makes a note of the tree from which frankincense is procured; and certain passages in his works indicate that dried flowers were used in his time by way of perfume, and that they were, as now, mixed with spices, a compound which the modern perfumer calls *pot-pourri*, used for scenting apartments, and generally placed in some ornamental vase.

It was not uncommon among the Egyptian ladies to carry about the person a little pouch of odoriferous gums, as is the case to the present day among the Chinese, and to wear beads made of scented wood. The "bdellium" mentioned by Moses in Genesis is a perfuming gum, resembling frankincense, if not identical with it.

Several passages in Exodus and also in other parts of the Scriptures,* prove the use of perfumes at a very early period among the Hebrews. In the thirtieth chapter of Exodus the Lord said unto Moses:

> 1. And thou shalt make an altar to burn incense upon; of Shittim wood shalt thou make it. . . . 7. And Aaron shall burn thereon sweet incense every morning; when he dresseth the lamps he shall burn incense upon it. . . . 34. Take unto thee sweet spices, stacte,

---

* Gen. xxxvii; Exodus xxx; Ps. cxxxiii; Exodus xl; Numb. xvi; 2 Chron. xxvi; Is. xxxix; 2 Chron. ix; Cant. iv; St. Mark xiv; Ps. xlv; Prov. vii; Est. ii; Cant. i; St. John xix; 2 Kings ix.

and onycha, and galbanum; these sweet spices with pure frankincense: of each shall there be a like weight. . . . 35. And thou shalt make it a perfume, a confection after the art of the apothecary,* tempered† together, pure and holy. . . . 36. And thou shalt beat some of it very small, and put of it before the testimony in the tabernacle of the congregration, where I will meet with thee; it shall be unto you most holy. . . . 37. And as for the perfume which thou shalt make, ye shall not make to yourselves according to the composition thereof; it shall be unto thee holy for the Lord. . . . 38. Whosoever shall make like unto that to smell thereto, shall even be cut off from his people.

It was from this religious custom, of employing incense in the ancient temples, that the royal prophet drew that beautiful simile of his, when he petitioned that his prayers might ascend before the Lord like incense. It was while all the multitude was praying without, at the hour of incense, that there appeared to Zachary an angel of the Lord, standing on the right side of the altar of incense. (Luke 1: 10.) That the nations attached a meaning, not only of personal reverence, but also of religious homage, to an offering of incense, is demonstrable from the instance of the Magi, who, having fallen down to adore the new-born Jesus, and recognized his Divinity, presented Him with gold, myrrh, and frankincense. The primitive Christians imitated the example of the Jews, and adopted the use of incense at the celebration of the Liturgy. St. Ephræm, a father of the Syriac Church, directed in his will that no aromatic perfumes should be bestowed upon him at his funeral, but that the spices should rather be given to the sanctuary. The use of incense in all the Oriental Churches is perpetual, and almost daily; nor do any of them ever celebrate their Liturgy without it, unless compelled by necessity. The Coptic, as well as other Eastern Christians, observe the same ceremonial as the Latin Church in incensing their altar, the sacred vessels, and ecclesiastical personages.‡

---

* In Drs. D'Oyly and Mant's Bible this word "apothecary," is italicized *perfumer*.

† "Tempered." The same writers render this word *salted*, that is, mixed with nitre, which is probably the correct interpretation, because such a mixture of resinous substances would not burn kindly without being previously "tempered" with saltpetre.

‡ Dr. Rock's *Hierurgia*.

The Rev. T. J. Buckton, describing *the precious ointment* of the Scriptures, says:

The sacred oil, with which the tabernacle, the ark of the covenant, the golden candlestick, the table, the altar of incense, the altar of burnt-offerings, the laver, and all the sacred utensils, and indeed the priests themselves, were anointed, was composed of a hin of the oil of olives, of the richest *myrrh*, of *cassia*, of *cinnamon*, and of sweet *calamus*. The proportions of the mixture were 500 parts of the myrrh and cassia, and 250 each of the cinnamon and calamus. This ointment could not be applied to any other purpose. (Exod. 30: 20–33.) The Septuagint names *one* of the ingredients, the myrrh, σμύρνης ἐκλεκτῆε, which corresponds with the myrrh, μύρον βαρυτίμου of Matthew (26 : 7), described as πολυτελής by Mark (14 : 3), and as πολύτιμος by John (12 : 3). The ointment probably prepared for Lazarus, which his sister Mary poured on the head and body of our Lord, consisted therefore of one only of the four ingredients of the sacred oil in use in the first Temple. Judas reprehended this anointing, as practised at banquets, as an extravagant luxury. So Martial (III, xii, 4) says:

> "Qui non cœnat et ungitur, Fabulle,
> Hic vere mihi mortuus videtur."

This view was corrected by our Lord, who says it was done preparatory to his entombment. (Mark 14 : 8.) Thus Jahn, in explaining the above passages in the Gospels, says: "It was their custom to expend upon the dead, aromatic substances, especially myrrh and aloes, which were brought from Arabia. This ceremony is expressed by the Greek verb ἐνταφιάζειν [to embalm or entomb], and was performed by the neighbors and relations."

In the other case (Luke 7: 37) the myrrh was only applied to the feet of our Lord after washing, and previous to partaking of a meal,—a common practice of antiquity, and once performed by our Lord himself to his disciples; when, however, no mention is made of anointing, it being probably too costly for general use. At Sparta, the selling of perfumed ointments was wholly prohibited; and in Athens, *men* were not allowed to engage in it. Different ointments were used for different parts of the body.—ESCHENBURG, iii, s. 170.

Gibbon* says:

> In a magnificent temple, raised on Palatine Mount, the sacrifices of the god Elagabalus (the sun) were celebrated, with every circumstance of cost and solemnity. The rarest aromatics were profusely consumed on his altar.

Horace, in an ode celebrating the return of Augustus from Spain, bids his slaves go and seek for perfumes, and desires the tuneful Neaera to make haste and collect into a knot her scented hair. These passages sufficiently indicate the elegant direction which the taste of the Romans took in the days of this poet, who himself was a voluptuary in flowers and fragrances.

Perfumes were used in the Church service, not only under the form of incense, but also mixed in the oil and wax for the lamps and lights commanded to be burned in the house of the Lord. The brilliancy and fragrance which were often shed around a martyr's sepulchre, at the celebration of his festival, by multitudes of lamps and tapers, fed with aromatics, have been noticed by St. Paulinus:

> With crowded lamps are these bright altars crowned,
> And waxen tapers, shedding perfume round
> From fragrant wicks, beam calm a scented ray,
> To gladden night, and joy e'en radiant day.†

Constantine the Great provided fragrant oils, to be burned at the altars of the greater churches in Rome; and St. Paulinus, of Nola, a writer of the end of the fourth, and beginning of the fifth century, tells us how, in his times, wax tapers were made for church use, so as to shed fragrance as they burned:

---

* Decline and Fall, vol. i, chap. vi, p. 234.

† Dr. Rock's *Hierurgia.*

> Lumina ceratis adolentur odora papyris.

Gold, frankincense, and myrrh, in silken bags, are still presented on Twelfth-day at the Chapel Royal in St. James's Palace. Formerly, the offering was made by the sovereign in person. The *Daily Post* newspaper, on Thursday, 7th January, 1742, informed its readers that:

> Yesterday, being Twelfth-day, his Majesty, the Duke, and Princesses went in state to the Chapel Royal, assisted at divine service, and during the offertory, his Majesty advanced to the altar; and according to the ancient custom of the kings of England, offer'd three purses fill'd with gold, frankincense, and myrrh, in commemoration of the presents made by the Eastern Magi as on that day at the Manifestation.

At present, the offering is made by two persons connected with the Lord Chamberlain's office. These gentlemen approach the altar during the reading of the offertory sentences; and, taking the purses said to contain the gold, frankincense, and myrrh, place them on the alms-dish, which is held forth for their reception by one of the officiating priests.

After Edward the Confessor restored, or rather rebuilt Westminster Abbey, he was so desirous of rendering the Abbey almost unique in its attractions, that he endowed it with relics—in those days beyond all price. Among these were to be noted here "part of the frankincense offered to Jesus by the Eastern Magi."*

---

* MSS. of the time of Henry III; Luard's Lives of Edward the Confessor.

In accordance with an ancient custom, the Pope of Rome every year blesses what is called the Golden Rose. This flower, which is made of the purest gold, and ornamented with precious stones, is rubbed with balm and incense. His Holiness recites verses explaining the mystic meaning of the benediction, after which he takes it in his left hand, and then blesses the people. Mass is then celebrated in the Sistine Chapel. The gold roses are ordinarily sent to female sovereigns, sometimes to princes, and sometimes, though rarely, to towns and corporations; the one of last year was sent to the Empress of the French, and that of the year before to the Queen of Spain.

A perfume in common use, even to this day, was the invention of one of the earliest of the Roman nobles, named Frangipani, and still bears his name; it is a powder, or sachet, composed of every known spice, in equal proportions, to which is added ground iris or orris root, in weight equal to the whole, with one per cent. of musk and civet. A liquid of the same name, invented by his grandson Mercutio Frangipani, is also in common use, prepared by digesting the Frangipane powder in rectified spirits, which dissolves out the fragrant principles. This has the merit of being the most lasting perfume made.

Notes and Queries recently published an article on "The origin of Frangipani," which has sufficient interest for us to transfer the matter to these pages.

"This is the name of a composition sold as a perfume, and which of late, through the enterprise of its vendors, has been pressed on the attention of the public through the advertising columns of our newspapers, periodicals, &c. The origin of the term seems worthy of a note; especially as many, I doubt not, have, like myself, supposed it to be without more signification than the names of other perfumes, but such is not the case.

"There is in Rome a family bearing the patronymic of Frangipani, as famous in Italy as the Plantagenets and the Tudors in England. The origin of the name of this family is traced to a certain office which an ancestor filled in the church—that of supplying the holy bread, the wafer in one of the ceremonials. Frangipani literally means 'broken bread,' and is derived from *frangi*, to break, and *panus*, bread. Hence we have the Frangipani puddings, which good housewives know are made with the broken bread. One member of this ancient family, Mutio Frangipani, served in France, in the Papal army, during the reign of Charles IX. The grandson of this nobleman was the Marquis Frangipani, Maréchal des Armées of Louis XIII; and he it was who invented a method of *perfuming gloves*, which, when so perfumed, bore the name of 'Frangipani gloves.'* Ménage, in his *Origini della Lingua Italiana*, published at Geneva in 1685, thus notices the Marquis and his invention:

"'Da uno di que' Signori Frangipani (l'abbiam veduto qui in Parigi) furono chiamati certi guanti porfumati, *Guanti di Frangipani.*'

"From the following passage in Le Laboureur's *Mémoires de Castelnau*,† it appears that the brother of the Marquis Frangipani had a share in the invention:

"'Ce dernier Marquis Frangipani, et son frère mort auparavant luy, inventèrent la composition du parfum et des odeurs qui retiennent encore le nom de Frangipane.'

"What the composition of the perfume was that gained for the Marquis so much reputation, I have not been able to discover. Ménage, who, it will be observed, was a contemporary, and had met the Marquis in Paris, alludes merely to *perfumed gloves*, and I am inclined to think that this was the only form in which the invention at first appeared. Le Laboureur speaks of his inventing 'la composition du parfum et des odeurs,' which, perhaps, may be understood to refer to some essence, powder, or pommade. This much, however, is certain, that various compositions, as *pommade*, *essence*, and *powder*, distinguished by the name of *Frangipani* or *Frangipane*, were sold by perfumers down to the latter part of the last century, when they gradually fell into disuse. M. Charles Piesse, a perfumer of Nice, was certainly at that period the most celebrated maker of Essence de Frangipane in Europe. During the last few years, however, the name has again found its way into the list of perfumes, and *Frangipani* is now sold more than it probably ever was before. The *formulæ* for the various compounds, as 'Pommade à la Frangipane,' 'Esprit de Frangipane,' &c., are so utterly discrepant, and have such slender pretensions to represent the original, that it is needless to quote them, and I shall only refer the reader who wishes for them to the works named below.*

---

* Vide Bayle, *Dictionnaire Historique et Critique;* Moreri, *Grand Dictionnaire*, ed. 1740, tome iv, p. 183.

† Ed. Bruxelles, 1731, tome ii, p. 651.

"The subject of *perfumed gloves*, which I may remark have long since disappeared from use, introduces us to some curious particulars regarding the trades of glover and perfumer. Savary, in his *Dictionnaire Universel de Commerce* (Genève et Paris, 1750), tells us that the glovers of Paris constitute a considerable community, having statutes and laws dating so far back as 1190. These statutes, after receiving various confirmations from the kings of France, were renewed, confirmed, and added to by Louis XIV, under Letters-Patent, in March, 1656. The glovers are therein styled 'Marchands Maîtres Gantiers-Parfumeurs.' In their capacity of glovers they had the right of making and selling gloves and mittens of all sorts of materials, as well as the skins used in making gloves; while as perfumers they enjoyed the privilege of perfuming gloves, and of selling all manner of perfumes. Perfumed skins were imported from Spain and Italy, and were used for making gloves, purses, pouches, &c.; they were very expensive and 'fort à la mode,' but their powerful odor led to their disuse as gloves, but, nevertheless, 'Peau d'Espagne' is in considerable demand for perfuming letter paper. There were issued to the public, from the Laboratory of Flowers, in New Bond Street, last year, 1808 pieces of four inches square. With regard to gloves, Savary remarks:

"'Il s'en tiroit autrefois quantité de parfumés d'Espagne et de Rome; mais leur forte odeur de musc, d'ambre et de civette, qu'on ne pouvoit soutenir sans incommodité, a fait que la mode et l'usage c'en sont presque perdus; les plus estimés de ces Gans étoient les Gans de Franchipane et ceux de Neroli.'[*]

---

* Celnart, *Nouveau Manuel complète du Parfumeur*, Paris, 1854, 18mo.; Piesse, *Art of Perfumery*, London, 1856, 8vo.

"Many receipts are extant for the perfuming of gloves, and though some of them are curious, they are too lengthy for me to quote more than the titles. Here, in the *Secreti de la Signora Isabella Cortese ne' quali si contengono Cose Minerali, Medicinali, Artificiose ed Alchimiche, e molte de l'Arte Profumatoria, appartenenti a ogni gran Signoria* (Venet., 1574, 12mo.) we find directions for 'Concia di guanti perfettissima, con musco ed ambracan,' and again 'Concia di granti senza musco perfetta.' I have also before me, from an old French work published at Lyons in 1657,[†] the precise directions for 'Civette très exquise pour parfumer gands et en oindre les mains.' In these compositions musk, ambergris, and civet were the chief perfumes; and as they were applied inside the gloves, combined with some sort of oil or grease, their use at the present day would be thought intolerable. The gloves of Frangipani were also prepared with grease, as I think we may gather from the following lines of Cerisantes:[‡]

'Amice, nil me sicut anteà juvat
Pulvere vel Cyprio
Comam nitentem pectere;
  Vel quas Britannus texuit subtiliter
Mille modis varias
Jactare ventis tænias;
  Vel quam *perunxit* Frangipanes ipsemet
Pelle, manum gracilem.
Coràm puellis promere.'

"The word *Franchipane*, or *Frangipane*, is applied in French cookery to a sort of pastry composed of almonds, cream, sugar, &c. In the West Indies it is used to designate the fruits of *Plumiera alba* L., and *P. rubra* L., because, according to Merat and De Lens,[§]

---

[*] Tome ii, p. 619.

[†] *Les Secrets du Seigneur Alexis Piemontois.*

[‡] They form part of an ode addressed "Ad Vincentem Victurum," which may be found at the end of the Latin letters of Balzac (*Balzacii Carminum Libri tres: ejusdem Epistolæ Selectæ*, ed. Æg. Menagio, Paris, 1650, 4to.).

[§] *Dict. de la Matière Médicale*, tome v, 405.

'on retrouve dans ces fruits mûrs le goût de nos franchipanes.' If these fruits are eatable, it is remarkable that neither Sloane nor Lunan mentions the fact. *Frangipanier* is, however, the French name of the *Plumiera*.—D. H."

One Mercutio Frangipani, who lived in 1493, was a famous botanist and traveller, famous as being one of the Columbus expedition when they visited the West India Islands. The sailors, as they approached Antigua, discovered a delicious fragrance in the air. This Mercutio told them, must be derived from sweet-smelling flowers. On landing they found vast quantities of the Plumiera Alba, in full bloom, rendering the air redolent with rich odor, and from this plant, which the present inhabitants of Antigua call the Frangipani flower, is distilled that exquisite fragrance which is now so popular in fashionable circles.

The trade for the East in perfume-drugs caused many a vessel to spread its sails to the Red Sea, and many a camel to plod over that tract which gave to Greece and Syria their importance as markets, and vitality to the rocky city of Petra. Southern Italy was not long ere it occupied itself in ministering to the luxury of the wealthy, by manufacturing scented unguents and perfumes. So numerous were the UNGUENTARII or perfumers, that they are said to have filled the great street of ancient Capua.—HOFMANN.

It was a *dictum* of the celebrated Beau Brummell that no man of fashion should use perfumes, but send his linen to be washed and dried on Hampstead Heath. Few subscribed to this arbitrary mandate; and it certainly opposed all precedent, both in ancient and modern times. The use of aromatics in the East may be dated from the remotest antiquity; and, even at the present day, to sprinkle guests with rose-water and perfume them with aloes-wood at the close of every visit, is deemed a token of hospitality and friendship. In that excellent book, which portrays the domestic life of the early Orientals, *The Arabian Nights*, there will be found several passages indicating the use of perfumes; thus in the story of *The Barber's Second Brother*, who finding himself enticed into the palace of the Grand Vizier's lady to be made a sport and fool of for her amusement, had *his eyebrows painted like a woman*, his beard shaved off, *and was then perfumed with wood of aloes and rose-water.* Arabia is the country of perfumes; and in more ancient times it was the practice to keep them in shells, which were thrown up large and beautiful on the shores of the Red Sea. Horace alludes to the same practice as prevalent at Rome when he flourished:

> Funde capacibu'
> Unguenta de conchis.

Again he sings:

> Fill up the polished bowls with oblivious music; pour out the perfumed ointment from the capacious shells.

Perfumes were also thought to keep well in vessels made of alabaster. Pliny explains the shape of these vessels by comparing them to the pearls called elenchi, which are known to have been shaped like pears. In hot climates fragrant oils dispersed unpleasant odors which heat is apt to generate, and thus became essential to the enjoyment of social life. The poets of Greece and Rome were loud in the praise of perfumes. Thus Anacreon (Ode XV) exclaims:

> Let my hair with unguents flow,
> With rosy garlands crown my brow.

The magic power of Medea consisted in her skill as a perfumer, and as an inventress of warm vapor-baths. Mr. Beloe says of her that she first of all discovered a flower which could make the color of the hair black or white: such, therefore, as wished to have black hair instead of white, by her means obtained their wish. That the professors of the medical art might not discover her secrets, she used fomentations in her baths in secret. These made men more active, and improved their health; and as her apparatus consisted of a caldron, wood, and fire, it was believed that her patients were in reality boiled. Pelias, an old and infirm man, using this operation, died in the process.

But these practices were not confined to Oriental nations; for Herodotus (Melpomene, c. lxxv) says: "The Scythian women bruise under a stone some wood of the cypress, cedar, and frankincense; upon this they pour a quantity of water till it becomes of a certain consistency, with which they anoint the body and the face. This at the time imparts an agreeable odor, and when removed on the following day gives the skin a soft and beautiful appearance." In the athletic exercises of the Olympic games, wrestlers and pancratists always anointed their limbs to render them more supple. In Greece the perfumes of Athens were most esteemed, as we learn from a curious passage preserved in Athenæus, from a fragment of the writings of Antiphănes, and the whole may amuse my readers. It runs thus, showing from what countries different degrees of excellence were obtained in his time: "A cook from Elis; a caldron from Argos; wine of Phlius; tapestry of Corinth; fish from Sicyon; cheese from Sicily; the perfumes of Athens; and the eels of Bœotia."

Sir John Bowring says that some porcelain jars were found in the adjacent ruins to the Pyramids, which contained cosmetics and perfumes three to four thousand years old; these jars bore Chinese inscriptions, the same which he has since traced among the Chinese poets of about the earlier period.

In the *Lives of the Queens of England* we read: "Perfumes were never richer, more elaborate, more costly or more delicate than in the reign of Elizabeth." Her Majesty's nasal organs were particularly fine; and nothing offended her more than an unpleasant smell. Perfumes and cosmetics of all kinds were in general use. The cosmetics and other smaller accessories to a lady's toilet were kept in boxes strongly impregnated with some favorite odor, and were called "sweet coffers." This term perpetually occurs in the old writers; they were reckoned a necessary part of the furniture of all state bed-chambers, and a fair criterion, by their form and richness, of the taste and liberality of the owner. The bottles of perfume connected with the common labors of the toilet were called "casting bottles." The pomander, which originally was meant only as a preventive of infection, as a camphor-bag is now, but became an article of fashionable luxury amongst people of rank, was a little ball of perfumed paste worn in the pocket, or hung round the neck. They soon became mediums for the most exquisite devices in jewelry, and were frequently offered as complimentary tokens, like the snuff-boxes of the present day. Many pomanders were presented to Queen Elizabeth as new-year's gifts, and among the list is the somewhat puzzling item of

> "A farye girdle of pomander."

Perfumed gloves were also fashionable.

Elizabeth had a cloak of Spanish perfumed leather, the value of which may be estimated by stating that pieces of "Peau d'Espagne" are now sold by the Bond Street perfumers of London at the rate of one shilling the square inch; even her shoes were perfumed. The city of course soon imitated the fashion of the court, as is apparent from frequent allusion by the dramatic writers of the time.

The extensive and free use made of essences and scents at this period gave rise to numerous satirical observations by the authors of the day. In ANSTEY'S *New Bath Guide,*—Bath then becoming the focus of everything refined and fashionable—

Bring, oh bring the essence pot!
Amber, musk, and bergamot,
Eau de chipre, eau de luce,
Sanspareil and citron juice.

As an indication of the "spirit of the times" of the latter part of the seventeenth century, we may here mention that an Act was introduced into the English Parliament, in 1770:

> "That all women, of whatever age, rank, profession, or degree, whether virgins, maids, or widows, that shall, from and after such Act, *impose upon*, *seduce*, and betray into matrimony, any of His Majesty's subjects, by the scents, paints, *cosmetic washes*, *artificial teeth*, *false hair*, Spanish wool (wool impregnated with carmine, and used to this day as a rouge), iron stays, hoops, high-heeled shoes, bolstered hips, shall incur the penalty of the law now in force against witchcraft and like misdemeanors, and that the marriage, upon conviction, shall stand null and void."

In NICHOLS'S *Progress of Queen Elizabeth*, he mentions that at Hawkstead, among the rooms on the ground floor was one called the "still-room," an apartment where ladies of the court much amused themselves in distilling fragrant waters.

In the "Northumberland Household Book," a work so often quoted by historians, there appears the following list of plants: Roses, Borage, Fumitory, Brakes, Columbynes, Oak-leaf, Harts-tongue, Draggon, Parcelly, Balme, Walnut-leaves, Ox-tongue, Primrose, Sage, Sorrel, Betony, Cowslip, Elder-flowers, Marygold, Tansy, and others, all for the use of the still-room.

All great men's houses possessed such an apartment, and ladies took lessons in the art of preparing perfumes and washes.

Shakspeare makes Cleopatra study (though it would seem for dangerous purposes) the properties of plants, and Cymbeline order the gathering of innocent flowers, to cover as guilty an object.

Advocating the proper use of the olfactory faculty as we do, it gives pleasure to quote a passage bearing upon the subject from SIR W. TEMPLE'S *Essay on Health and Long Life.*

> Fumigation, or the use of scents, is not, that I know of, at all practised in our modern physic, nor the power and virtues of them considered among us, yet they may have as much to do good, for aught I know, as to do harm, and contribute to health as well as disease, which is too much felt by experience in all that are infectious, and by the operations of some poisons that are received by the smell. How reviving as well as pleasing some scents of herbs and flowers are, is obvious to all; how great virtues they may have in diseases, especially of the head, is known to few, but may easily be conjectured by any thinking man. . . . . . .
>
> I remember, he continues, that walking in a long gallery of the Indian House of Amsterdam, where vast quantities of mace, cloves,

> and nutmegs were kept in great open chests all along one side of the room, I found something so reviving by the perfumed air, that I took notice of it to the company with me, which was a great deal, and they all were sensible of the same effect, which is enough to show the power of smells and their operations both upon the health and humor.

Thanks to Stow, we are acquainted with the exact period at which perfumes were introduced into England.

> Milleners or haberdashers, he says, had not then any gloves imbroydered or trimmed with gold or silke; neither could they make any costly wash or perfume, until about the fifteenth yeere of the queen (Elizabeth), the Right Honourable Edward de Vere, Earl of Oxford, came from Italy, and brought with him gloves, sweete bagges, a perfumed leather jerkin, and other pleasant things; and that yeere the queene had a pair of perfumed gloves, trimmed only with four tuffes, or roses of coloured silk: the queene took such pleasure in those gloves, that she was pictured with those gloves upon her handes, and for many yeeres after it was called "the Earl of Oxford's perfume."

The old comedies of Elizabeth's time are full of allusions to oils and essences, quintessences, pomatums, perfumes, and paint, white and red. Strutt quotes a MS. receipt of this date to make the face of a beautiful color. A person desirous of improving his complexion was to be placed in a bath, that he might perspire freely, and afterwards to wash his face with wine, and "so should he be both faire and ruddy." The Earl of Shrewsbury, who had charge of the unfortunate Queen of Scots, made an application for an increased allowance, on the ground of her expensive habit of bathing in wine. Generally, elder beauties bathed in wine; the young ones were contented with milk. Milk baths were in the height of fashion in Charles the Second's reign. But the attempt thus to cheat Time of his wrinkles was vain; the would-be fair ones were driven in despair to conceal what they found it impossible to remove, and patches became the rage.

The ancients indulged in perfumes much more luxuriously than we do. Mr. Sidney Whiting, in his imaginative and scholarly production, "Heliondé, or Adventures in the Sun," fancifully describes the inhabitants of that orb as sustaining life solely upon sweet scents.

Curious as are the records of the indulgence of former ages in cosmetics and aromatics, it has certainly been reserved for our own time to perfect the science of perfumery. Within the laboratory of the perfumer, chemistry now holds a recognized place, and acres of some of the fairest spots in Europe and Asia are devoted to the cultivation of flowers whose fragrance is no longer wasted on the desert air, but preserved for the enjoyment of all who choose to purchase it.

SECTION II.

Unbidden earth shall wreathing flowers bring,
And fragrant herbs the promises of spring,
As her first offering to the ruling king.
DRYDEN'S *Virgil.*

As an art in England, perfumery has attained little or no distinction. This has arisen from those who follow it as a trade maintaining a mysterious secresy about their processes. No manufacture can ever become great or important to the community that is carried on under a veil of mystery. I am rather of the Grecians' mind, who once a year wrote in the temple of Æsculapius all the cures they had performed, and by what means they had effected them!

On the subject of trade mystery I will only observe, that I am convinced that it would be far more to the interest of manufacturers if they were more willing to profit by the experience of others, and less fearful and jealous of the supposed secrets of their craft. It is a great mistake to think that a successful manufacturer is one who has carefully preserved the secrets of his trade, or that peculiar modes of effecting simple things, processes unknown in other factories, and mysteries beyond the comprehension of the vulgar, are in any way essential to skill as a manufacturer, or to success as a trader.—PROFESSOR SOLLY.

In the dark ages it was always a secret, a mystery, or a craft, in the hands of a guild, a profession, or a fraternity of some sort or other. In those days wisdom preyed upon ignorance, and nobody cared to know anything except as a means of overreaching his neighbor. Science, being thus divorced from Reason, and robbed of its innocence, so to speak, was very naturally treated as a species of witchcraft, and a man who stole a march on the average intellect of the day was not unfrequently burnt for a dealer in the black art. It is well known that many who so suffered had to thank themselves for the delusion which proved fatal to them, as they had purposely mystified their knowledge of nature. There are secrets in these days, many of which are as highly prized and as jealously guarded as the secrets of mediæval art. Yet an atmosphere of secresy is not generally conducive to public improvement, or even to private advantage. The first manufacturers of the age have no secrets. They are ready to show their works to any respectable stranger; and, even if they have gained upon their neighbors in some device for the economy of labor or material, they won't keep it to themselves. They trust to an improving spirit, and to an energy always in advance, rather than to the exclusive possession of this or that little "dodge." Small people don't understand this. They are always looking out for the trick which is to open the door of fortune, and show the royal road to inexhaustible wealth.*

If the horticulturists of England were instructed how to collect the odors of flowers, a new branch of manufacture would spring up in some of our warm colonies, to vie with our neighbors' skill in it across the Channel.

Time was, when in the *still-room* "distilled waters" and "cordials" were drawn and dispensed as specifics for maladies to guests and dependents, but now this practice is out of use, because they can be purchased cheaper than they can be made at home; nevertheless the *still-room maid* preserves her name, though rarely required to perform her ancient duties.†

---

* *Times*, Oct. 31, 1855.

† To expect the revival of this part of domestic economy would be absurd, yet we must say that a domestic laboratory attached to the conservatory would prove highly instructive and amusing. To those even who have no conservatory, we would yet advise to set a room apart in their mansions, with the title of "laboratory," or the ancient one of "still-room." Here experiments may be made,

Of our five senses, that of SMELLING has been treated with comparative indifference. However, as knowledge progresses, the various faculties with which the Creator has thought proper in His wisdom to endow man will become developed, and the faculty of Smelling will meet with his share of tuition as well as Sight, Hearing, Touch, and Taste.

St. Paul tells the Corinthians, "that there should be no schism in the body, but that the members should have the same care one for another. And whether one member suffer all the members suffer with it; or one member be honored all the members rejoice in it; nay, much more those members which *seem* to be more *feeble are necessary.* If the whole body were an eye, where were the hearing? if the whole were hearing, where were the smelling?" These arguments appear so conclusive in favor of a just and proper estimation of the value of smelling, that it would seem impossible to neglect it without bodily suffering as a consequence.

Practically, the author has always found it so: among the lower orders, bad smells are little heeded; in fact, "noses have they, but they smell not;" and the result is, a continuance to live in an atmosphere

---

scents distilled, and an acquaintance courted with "common things," without interfering with other people of the establishment, or "making a mess about the house." The amount of instruction that can be derived from a private laboratory is far more than at first sight can be conceived, and the entertainment, changeable as a kaleidoscope, is intellectually considered inmeasurably superior either to crochet or Berlin work. The delicate manipulations of chemical experiments are well, even better, suited to their physical powers than to the sterner sex, and to the ladies, therefore, we commend the charge of becoming the *chefs* of the modern still-room.

laden with poisonous odors, whereas any one with the least power of smelling retained shuns such odors, as they would any other thing that is vile or pernicious. In the public schools "common things" are now being taught; to complete the idea, youth must be instructed that, when the nose is offended, the body will indirectly suffer. If they are not taught to know by name every odor that they smell, they can at least be made familiar with the deadly effects of sulphuretted hydrogen, and other of the putrescent gases, and so avoid them in future life.

The influence of this sense over the frame is very remarkable: one odor will instantly produce loathing, nausea, and vomiting, another has a part in producing an exhilarating effect upon the mind, such as the fragrance of the country air on a spring morning, or the sweet sea-breeze laden with the brominic odors from stranded weeds. The first smell of the sea to a landsman wonderfully affects the nervous system.

The fragrance of the fields in hay-making time, a walk in a garden at evening's close, all produce an exhilarating effect upon the mind.

Odors are capable of a very wide diffusion, so much so, that one can scarcely credit that at all times odor necessarily implies materiality. It seems that, in numerous instances, odor acts as an imponderable agent, rather than physical matter. It is clear that certain matters produce certain odors, but it is not equally definite that the matters in question are themselves the odors. My view of the case induces me to conclude that we can best understand the true theory of odor by viewing it as an imponderable agent, affecting the nervous system, as color affects the eye, and sound the ear.

The analogy which exists between color and sound has long been admitted. The ancients felt their connection when they identified the musical gamut as the *chromatic* scale. Bacon, and numerous writers since his time, have written upon this subject, and some have attempted to show that the harmony of colors agrees with the melody of the scale.

G. B. Allen, Mus. Bac., has written several papers in the *Musical World*, "On the Analogy existing between Musical Scales and Colors;" wherein he shows that all composers of merit have perception of this analogy, and which is apparent in all their works.

Field, in his *chromatics*, arranges the scale thus:

Blue.	*Purple.*	*Red.*	*Orange.*	*Yellow.*	*Green.*	*Green.*
Do	Re	Mi	Fa	Sol	La	Si

and proves the analogy by the following: As the three primary colors, blue, red, yellow, in combination, or contrast, produce the most perfect harmony, so do the sounds, Do, Mi, Sol. The metrochrome and the monochord also prove their exact agreement. By this first instrument we discover that in pure white light there are eight degrees of blue, five of red, and three of yellow. And by the latter that eight parts of a string will give Do, five Mi, and three Sol. This agreement is curious, and proves the existence of some universal law of harmony.

Scents, like sounds, appear to influence the olfactory nerve in certain definite degrees. There is, as it were, an octave of odors like an octave in music; certain odors coincide, like the keys of an instrument.

Such as almond, heliotrope, vanilla, and clematis blend together, each producing different degrees of a nearly similar impression. Again, we have citron, lemon, orange peel, and verbena, forming a higher octave of smells, which blend in a similar manner. The analogy is completed by what we are pleased to call semi-odors, such as rose and rose-geranium for the half note; petty grain, neroli, a black key, followed by fleur d'orange. Then we have patchouly, santal-wood, and vitivert, and many others running into each other. *Chambers's Journal*, reviewing the first edition of this work, says, in reference to this remark of ours, that,

> We know that music depends upon a fixed mathematical law, not invented by man, but existing in nature. Nature is not a prodigal in her operations—she is no waster of power: the better she is understood, the more simple she appears; and there is nothing, therefore, contrary to sound reason in the idea, that the whole of the pleasures of the sense of smell will be found to depend upon cognate laws.

From the odors already known we may produce, by uniting them in proper proportion, the smell of almost any flower, except jasmine. Reviewing an early edition of this book in *Household Words*, July 3, 1857, Dickens says:

> Is jasmine, then, the mystical Merù—the centre, the Delphi, the Omphalos of the floral world? Is it the point of departure—the one unapproachable and indivisible unit of fragrance? Is jasmine the Isis of flowers, with veiled face and covered feet, to be loved of all, yet discovered by none? Beautiful jasmine! If it be so, the rose ought to be dethroned, and the Inimitable enthroned queen in her stead. Revolutions and abdications are exciting sports; suppose we create a civil war among the gardens, and crown the jasmine empress and queen of all?

The odors of some flowers resemble others so nearly, that we are almost induced to believe them to be the same thing, or at least, if not evolved from the plant as such, to become so by the action of the air-oxidation. It is known that some actually are identical in composition, although produced from totally different plants, such as camphor, turpentine, rosemary. Hence we may presume that chemistry will sooner or later produce one from the other, for with many it is merely an atom of water or an atom of oxygen that causes the difference. It would be a grand thing to produce otto of roses from oil of rosemary, or from the rose geranium oil; and theory indicates its possibility.

The essential oil of almonds in a bottle that contains a good deal of air-oxygen, and but a very little of the oil, spontaneously passes into another odoriferous body, benzoic acid; which is seen to form in crystals over the dry parts of the flask. This is a natural illustration of this idea.

To the "unlearned" nose all odors are alike, but when tutored, either for pleasure or profit, no member of the body is more sensitive. Wine merchants, tea-brokers, drug dealers, tobacco importers, and many others, have to go through a regular nasal educational course. A hop merchant buries his nose into a pocket, takes a sniff, and then sets his price upon the bitter flower.

The odors have to be remembered, and it is noteworthy here to remark with what persistence odors do fix themselves upon the memory; and were it not for this remembrance of an odor, the merchants in the trades above indicated would soon be at fault.

An experienced perfumer will have two hundred odors in his laboratory, and can distinguish every one by name. Could a musician, with an instrument of two hundred notes, distinguish and name any note struck, without his seeing the instrument?

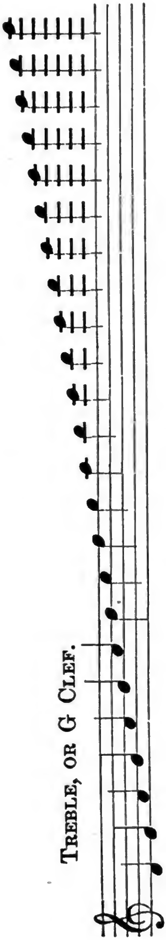
In the following gamut I have endeavored to place the name of the odor in its position corresponding to its effect on our senses.

I have purposely chosen those odors which are more especially used in perfumery, but I wish it to be understood that all odors, from whatever source derived, may be similarly classified. I know of no odor in a chemical laboratory, and they are pretty numerous, to which I could not assign its corresponding key.

There are odors to which neither sharps nor flats are known, and there are others which would almost form a gamut in themselves by their variety of differences. The most numerous class of odors in nature are of the lemon character.

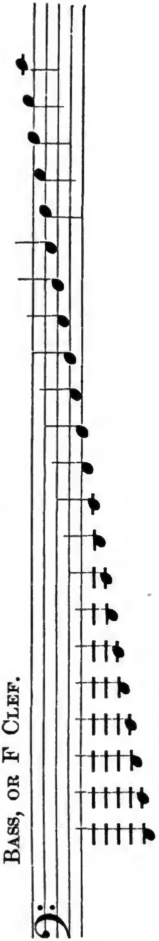
If a perfumer desires to make a bouquet from primitive odors, he must take such odors as chord together, the perfume will then be harmonious. In passing the eye down the gamut it will be seen what is harmony and what is a discord of smells. As an artist would blend his colors, so must a perfumer blend his scents.

THE GAMUT OF ODORS.



F	Civet.
E	Verbena.
D	Citronella.
C	Pineapple.
B	Peppermint.
A	Lavender.
G	Magnolia.
F	Ambergris.
E	Cedrat.
D	Bergamot.
C	Jasmin.
B	Mint.
A	Tonquin Bean.
G	Syringa.
F	Jonquille.
E	Portugal.
D	Almond.
C	Camphor.
B	Southernwood.
A	Vernal Grass (new Hay).
G	Orange Flower.
F	Tuberose.
E	Acacia.
D	Violet.

THE GAMUT OF ODORS.



C	Rose.
B	Cinnamon.
A	Tolu.
G	Sweet Pea.
F	Musk.
E	Orris.
D	Heliotrope.
C	Geranium.
B	Stocks and Pinks.
A	Balsam of Peru.
G	Pergalaria.
F	Castor.
E	Calamus.
D	Clematis.
C	Santal.
B	Clove.
A	Storax.
G	Plumeria Alba (Frangipani Plant).
F	Benzoin.
E	Wallflower.
D	Vanilla.
C	Patchouly.

In making several perfumes for choice they must be so mixed as to form a contrast when side by side.

The complementary of vanilla is citronella. The following recipes will give an idea how to make a bouquet according to the laws of harmony:

Bass.		
G	Pergalaria.	Bouquet of chord G.
G	Sweet Pea.	
D	Violet.	
F	Tuberose.	
G	Orange Flower.	
B	Southernwood.	
Treble.		

Bass.		
C	Santal.	Bouquet of chord C.
C	Geranium.	
E	Acacia.	
G	Orange Flower.	
C	Camphor.	
Treble.		

Bass.		
F	Musk.	Bouquet of chord F.
C	Rose.	
F	Tuberose.	
A	Tonquin Bean.	
C	Camphor.	
F	Jonquil.	
Treble.		

In making a bouquet every primitive odor must be brought to some standard of strength or "power of odor." Thus, the standard of spirit of roses is, three ounces of otto rose to one gallon of spirit. But the standard of geranium is eight ounces of otto geranium to one gallon of spirit. The ottos differing in "power of odor" as three is to eight. Electricians make a clear difference between "intensity" and "quantity;" verbena may be cited as indicating the former, vanilla as the latter. Camphor is three times more intense than rose.

There is a property in sound and in light, says Sir David Brewster, too remarkable to be passed without notice. "Two loud sounds may be made to produce silence, and two strong lights may be made to produce darkness."*

---

* If two equal and similar strings, or the columns of air in two equal and similar pipes, perform exactly 100 vibrations in a second, they will produce each equal waves of sound, and these waves will conspire in generating an uninterrupted sound, double of either of the sounds heard separately. If the two strings or the two columns of air are not in unison, but nearly so, as in the case where the one vibrates 100 and the other 101 times in a second, then at the first vibration the two sounds will form one of double the strength of either; but the one will gradually gain upon the other, till at the fiftieth vibration it has gained half a vibration on the other. At this instant the two sounds will *destroy one another*, and an interval of perfect silence will take place. The sound will instantly commence, and gradually increase till it becomes loudest at the hundredth vibration, where the two vibrations conspire in producing a sound double of either. An interval of silence will again occur at the 150th, 250th, 350th vibration, or every second, while a sound of double the strength of either will be heard at the 200th, 300th, and 400th vibration. When the unison is very defective, or when there is a great difference between the number of vibrations which the two strings or columns of air perform in a second, the successive sounds and intervals of silence resemble a rattle. With a powerful organ, the effect of this experiment is very fine, the repetition of the sounds *wow—wow—wow*—representing the double sound and the interval of silence which arise from the total extinction of the two separate sounds.

The phenomenon corresponding to this in the case of light is

A similar analogy exists in the most *powerful odors.* Concentrated ammonia and concentrated acetic acid

---

perhaps still more surprising. If a beam of *red* light issues from a luminous point, and falls upon the retina, we shall see distinctly the luminous object from which it proceeds; but if another pencil of red light issues from another luminous point, anyhow situated, provided the difference between its distance and that of the other luminous point from the point of the retina on which the first beam fell, is the 258-thousandth part of an inch, or exactly *twice*, *thrice*, *four* times, &c., that distance; and if this second beam falls upon the same point of the retina, the one light will increase the intensity of the other, and the eye will see *twice* as much light as when it received only one of the beams separately. All this is nothing more than what might be expected from our ordinary experience. But if the difference in the distances of the two luminous points is only *one-half* of the 258-thousandth part of an inch, or 1½, 2½, 3½, 4½ times that distance, *the one light will extinguish the other and produce absolute darkness.* If the two luminous points are so situated, that the difference of their distances from the point of the retina is intermediate between 1 and 1½, or 2 and 2½, above the 258-thousandth part of an inch, the intensity of the effect which they produce will vary from absolute darkness to double the intensity of either light. At 1¼, 2¼, 3¼ times, &c., the 258-thousandth of an inch, the intensity of the two combined lights will be equal only to one of them acting singly. If the lights, in place of falling upon the retina, fall upon a sheet of white paper, the very same effect will be produced, a black spot being produced in the one case, and a bright white one in the other, and intermediate degrees of brightness in intermediate cases. If the two lights are *violet*, the difference of distances at which the preceding phenomena will be produced will be the 157-thousandth part of an inch, and it will be intermediate between the 258th and the 157-thousandth part of an inch for the intermediate colors. This curious phenomenon may be easily shown to the eye, by admitting the sun's light into a dark room through a small hole about the 40th or 50th part of an inch in diameter, and receiving the light on a sheet of paper. If we hold a needle or piece of slender wire in this light, and examine its shadow, we shall find that the shadow consists of bright and dark stripes succeeding each other alternately, the stripe in the very middle or axis of the shadow being neutralize each other, and produce an *inodorous body.* It will be said, here is chemical combination,—ad-

---

a bright one. The rays of light which are bent into the shadow, and which meet in the very middle of the shadow, have exactly the same length of path, so that they form a bright fringe of double the intensity of either; but the rays which fall upon a point of the shadow at a certain distance from the middle, have a difference in the length of their paths, corresponding to the difference at which the lights destroy each other, so that a *black* stripe is produced on each side of the middle bright one. At a greater distance from the middle, the difference becomes such as to produce a bright stripe, and so on, a bright and a dark stripe succeeding each other to the margin of the shadow.

The explanation which philosophers have given of these strange phenomena is very satisfactory, and may be easily understood. When a wave is made on the surface of a still pool of water, by plunging a stone into it, the wave advances along the surface, while the water itself is never carried forward, but merely rises into a height and falls into a hollow, each portion of the surface experiencing an elevation and a depression in its turn. If we suppose two waves equal and similar to be produced by two separate stones, and if they reach the same spot at the same time, that is, if the two elevations should exactly coincide, they would unite their effects, and produce a wave twice the size of either; but if the one wave should be just so far before the other, that the hollow of the one coincided with the elevation of the other, and the elevation of the one with the hollow of the other, the two waves would obliterate or destroy one another, the elevation, as it were, of the one filling up half the hollow of the other, and the hollow of the one taking away half the elevation of the other, so as to reduce the surface to a level. These effects will be actually exhibited by throwing two equal stones into a pool of water, and it will be seen that there are certain lines of a hyperbolic form where the water is quite smooth, in consequence of the equal waves obliterating one another, while, in other adjacent parts, the water is raised to a height corresponding to both the waves united.

In the tides of the ocean we have a fine example of the same principle. The two immense waves arising from the action of the sun and moon upon the ocean produce our spring-tides by their combimitted; but the odors, now lost, can be readily reproduced in their natural potency.

Where there are disagreeable odors, and it is at the same time impossible to get rid of them by an air current, the best neutralizer is another odor. For this purpose, and with what beneficial result, brown paper is burned now and then in our homes, is well known.

In this way the cadaverous odors of our old cathedrals and abbeys, formerly used as burial-places, were overcome with the vapor of incense, not merely masked, as some persons assert, but neutralized by combination.

Pestiferous emanations are all of an alkaline, if not

---

nation, or when the elevations of each coincide; and our neap-tides, when the elevation of the one wave coincides with the depression of the other. If the sun and moon had exerted exactly the same force upon the ocean, or produced tide waves of the same size, then our neap-tides would have disappeared altogether, and the spring-tide would have been a wave double of the wave produced by the sun and moon separately. An example of the effect of the equality of the two waves occurs in the port of Batsha, where the two waves arrive by channels of different lengths, and actually obliterate each other.

Now, as sound is produced by undulations or waves in the air, and as light is supposed to be produced by waves or undulations in an ethereal medium, filling all nature, and occupying the pores of transparent bodies, the successive production of sound and silence by two loud sounds, or of light and darkness by two bright lights, may be explained in the very same manner as we have explained the increase and the obliteration of waves formed on the surface of water. If this theory of light be correct, then the breadth of a wave of *red* light will be the 258-thousandth part of an inch, the breadth of a wave of green light, the 207-thousandth part of an inch, and the breadth of a wave of violet light, the 157-thousandth part of an inch.

ammoniacal character, and readily combine with the products of slow combustion, all of which are acid, or have an acid character in their chemical reactions. Those subtle emanations which engender disease, whether derived from the malarious swamp, or as effete matter from the lungs of a disordered person, are at once destroyed by the odorous vapors resulting from slow combustion.

Benzoin is the principal ingredient in all the vended combinations for sweet fumigation. This yields by heat the highly volatile benzoic acid: in fault of having matter with which it can combine, it will, when diffused in a house, cling to the walls and penetrate every nook and cranny.

Fever may have its own in one chamber, but it will rarely penetrate another room, even in the same house, if there be an occasional sacrifice of incense.

The smell of burning flesh is most revolting,—no wonder the Romans burnt incense at the funeral pile.

Perhaps it was the bad smell of a burning heretic that induced us to quench the martyrs' fire; for England had no incense in those days.

Although tastes do differ, yet it is worthy perhaps of recording a fact I have observed,—namely, that the scents which are most liked by youth are of lower bass note, while that of age prefer the upper treble.

ODORS OF THE EARTHS.

All those materials which are distinguished in ordinary conversation as earths, give out a peculiar and characteristic odor immediately they are wetted with water. Every pedestrian on the high-road in the country, during the summer months, being "caught in a shower," must have remarked the delightful fragrance that fills the air a few minutes after the rain has fallen, and then passes away. When chalk, or rather whiting, is mixed with water, an odor is evolved which is very persistent, but by no means fragrant to every nose; again, oxides of iron, manganese, and many other bodies in the category of earthy substances, give out odor when wetted. At present we can do no more than simply record the fact, without entering into speculation as to the cause of these phenomena, without indeed it be of a negative kind, in stating that these odors are certainly not due to any matter in the water prior to its touching the earth, for the same result has been noticed when the purest distilled water has been used for the purpose of the experiment; neither can the observation be confined solely to earth and water, for when hydrochloric acid is poured on to oxide of zinc, there is a pleasant odor given out, as a by-product of the combination which then takes place between the acid and zinc oxide.

This matter, full of interest, we leave to the hands of the laboratorians.

SECTION III.

Were not summer's distillations left
A liquid prisoner, pent in walls of glass,
Beauty's effect of beauty were bereft,
Nor it, nor no remembrance what it was;
But flowers distilled, though they with winter meet,
Leese but their show, their substance still lives sweet.
SHAKSPEARE.

FLOWERS yield perfumes in all climates, but those growing in the warmer latitudes are most prolific in their odor, while those from the colder are the sweetest. Hooker, in his travels in Iceland, speaks of the delightful fragrance of the flowers in the valley of Skardsheidi; we know that winter-green violets and primroses are found here, and the wild thyme in great abundance. Mr. Louis Piesse, in company with Captain Sturt, exploring the wild regions of South Australia, writes: "The rains have clothed the earth with a green as beautiful as a Shropshire meadow in May, and with flowers, too, as sweet as an English violet; the pure white anemone resembles it in scent. The yellow wattle, when in flower, is splendid, and emits a most fragrant odor."

A writer in Upper Canada says:

> By the way, I send you herewith a withe or two of our "Indian grass," whose delicious scent you will not fail to remark. . . . . You have nothing of the kind in England to compare with it, and I wonder your perfumers do not use it. It's very plentiful here.

Every country and clime offers up its ripened odors from the earth to the most High. The mighty and majestic Alps are redolent with choicest aromatics; the frigid zone is sumptuous with rarest perfumes; that wrinkled and garrulous old graybeard, Ocean, lavishes up ambergris on his sands; the hottest regions, the torrid zone, regale the senses with their concentrated volatile spirits, constituting the delicious *aroma* of their divers products, unknown to chemical analyses.—Forster Ker.

Though many of the finest perfumes come from the East Indies, Ceylon, Mexico, and Peru, the South of Europe is the only real garden of utility to the perfumer. Grasse, Cannes,* and Nice, are the principal seats of the art; from their geographical position, the grower, within comparatively short distances, has at command that change of climate best fitted to bring to perfection the plants required for his trade. On the sea-coast, his cassie grows without fear of frost, one night of which would destroy all the plants for a season; while nearer the mountains of the Estrelle (the foot of the Alps), his violets are found sweeter than if grown in the warmer situations, where the orange tree and tuberose bloom to perfection. England can claim superiority in the growth of lavender and peppermint; the essential oils extracted from these plants grown at Mitcham, in Surrey, and at Hitchin, in Hertfordshire, realize eight times the price in the market of those produced in France or elsewhere, and are fully worth the difference for delicacy of odor. At Cannes are produced all the products of rose, tubereuse, cassie, jasmine, and orange-*neroli.* At Nîsmes the cultivators direct their chief attention to thyme, rosemary, aspic, and lavender. At Nice the factors have a *spécialité* for violet and rézéda. Sicily yields lemon and orange, Italy orris and bergamot.

---

* Cannes, or Cagnes, is a small seaport on the Mediterranean, at the southeast extremity of France. Here Napoleon I landed from Elba on the 1st of March, 1815. It is situated twenty-one miles from Nice, nine miles from Grasse, 120 miles from the port of Marseilles, and fourteen miles from the Var, which till the cession of Savoy by Victor Emanuel separated France from Sardinia. This river is crossed by a long wooden bridge, which is not unfrequently washed away by the overwhelming torrents, which bring with them enormous masses of stone and other matter, ultimately received by the sea. On each side of this bridge were (1860) the French and Sardinian Custom-houses. Cannes is sometimes termed an "English colony," from its having become the winter abode of several distinguished persons, among them the Right Hon. Lord Brougham, whose residence is the Château Eleanora Louisa, so named after his lordship's late daughter, to whose memory it is dedicated, and on the subject of whose loss the most feeling verses by Lord Carlisle, Marquis Wellesley, and her father, are inserted in the interior walls. She died at the age of seventeen, and the deep and everlasting devotion to her memory is a touching trait in the character of the acute lawyer and brilliant statesman. Here is situated the perfumery works of M. L. Herman. The present population of Cannes is about 5000.

Grasse is situated twelve miles north of Cannes, rising considerably from the sea up the Estrelle Mountains. It contains a population of about 12,000. Here is situated the great perfumery works of MM. Pilar, frères.

The odors of plants reside in different parts of them, sometimes in the roots, as in the iris and vitivert; the stem or wood, in cedar and santal; the leaves, in mint, patchouly, and thyme; the flower, in the roses and violets; the seeds, in the Tonquin bean and caraway; the bark, in cinnamon, &c.

Some plants yield more than one odor, which are quite distinct and characteristic. The orange tree, for instance, gives three,—from the leaves one called *petit grain;* from the flowers we procure *neroli;* and from the rind of the fruit, essential oil of orange, named "*Portugal.*" On this account, perhaps, this tree is the most valuable of all to the operative perfumer.

The fragrance or odor of plants is owing, in nearly all cases, to a perfectly volatile oil, either contained in small vessels, or sacs, within them, or generated from time to time, during their life, as when in blossom. Some few exude, by incision, odoriferous gums, as benzoin, olibanum, myrrh, &c.; others give, by the same act, what are called balsams, which appear to be mixtures of an odorous oil and an inodorous gum. Some of these balsams are procured in the country to which the plant is indigenous by boiling it in water for a time, straining, and then boiling again, or evaporating it down till it assumes the consistency of treacle. In this latter way is balsam of Peru procured from the *Myroxylon peruiferum*, and the balsam of Tolu from the *Myroxylon toluiferum*. Though these odors are agreeable, they are not much applied in perfumery for handkerchief use, but by some they are mixed with soap, and in England they are valued more for their medicinal properties than for their fragrance.

The odors of flowers are more generally secreted during the sunshine, or at least in the daytime, but there are some which yield no odor in the day, but are very fragrant in the evening, such as the *Cestrum nocturnum*, the *Lychinis vespertina*, some of the *Catasetum* and the *Cymbidium*.

There are a few flowers which receive their specific name, *tristis*, SAD, on account of their being odoriferous only at night; such are *Hesperis tristis*, *Nyctanthes arbor tristis*.

In an article in the *Journal de Pharmacie*,* by M. Recluz, "On the effects of the sun's rays upon the flowers of the *Cacalia septentrionalis*," he says, "When the sun shines upon the flowers of this plant, they are odoriferous, but when the sun's rays are intercepted by artificial means—that is by interposing the hand,—their odor quickly disappears, but their fragrance returns as rapidly when the shade is removed."

Marren states, as quoted by Dr. Balfour, that the flowers of the *Habenaria bifolia*, growing near Liége, which are quite scentless during the day, give out a pleasant penetrating aroma in the evening, usually about 11 P. M. He found that the perfume manifested itself at twilight, exhibited the greatest energy at the time when the darkness of night prevailed, and decreased with the dawn. Two racines of flowers of this orchid were placed in two cylindrical glasses filled with water, in which the plants were totally submerged; one glass was placed in the sunshine, the other in the shade. As evening came on, a delicious aroma became evident, and was emitted during the night, but disappeared at sunrise. These experiments induced Marren to come to the conclusion that the odor of flowers depends on some physiological cause, and not on the evaporation of particles, nor the accumulation of them in parts of the plants where they have their origin. He found that aromatic orchids, such as the *Marillaria aromatica*, lost their perfume half an hour after the application of pollen had been artificially made, and that the unfertilized flowers retained their odor the longest time.

M. Trinchinetti, who has also experimentalized on the odors of plants, divides odoriferous flowers into two classes:

---

* Page 216, 1827.

1. Those in which the intermission of odor is connected with the opening and closing of the flower; and in this class there are two subdivisions.

A. Flowers which are closed and scentless during the day, and are open and odoriferous at night, such as *Mirabilis jalapa*, *M. dichotoma*, *M. longiflora*, *Datura ceratocaula*, *Nyctanthes arbor tristis*, *Cereus grandiflorus*, *C. nycticalus*, *C. serpentinus*, *Mesembryanthemum noctiflorum*, and some species of *Silene*.

B. Flowers which are closed and scentless during the night, and are open and odoriferous during the day, such as, *Convolvulus arvensis*, *Cucurbita pepo*, *Nymphæa alba*, and *Nymphæa cærulea.*

2. Flowers which are always open, but which are odoriferous at one time and scentless at another. Under this class there are two sections:

A. Flowers always open, and only odoriferous during the day, such as, *Cestrum diurnum*, *Caronilla glauca*, and *Cacalia septentrionalis.*

B. Flowers always open, but only fragrant at night, such as *Pelargonium triste*, *Cestrum nocturnum*, *Hesperis tristis*, and *Gladiolus tristis.*

The exudation of odors by nocturnal flowers sometimes takes place in a peculiarly intermittent manner. Thus, in the night-blooming *Cereus* (*Cereus grandiflorus*), the flowers are fragrant only at intervals, giving out puffs of odor every half hour, from eight in the evening till midnight. Balfour,* on the authority of Marren, states that on one occasion the flowers began to expand at six o'clock in the evening, when the first fragrance was perceptible in the hothouse. A quarter of an hour afterwards, the first puff of odor took place, after a rapid motion of the calyx; at twenty-three minutes past six there was another powerful emanation of fragrance; by thirty-five minutes past six, the flowers were completely open; at a quarter to seven the odor of the calyx was the strongest, but modified by the petals; after this time the emanation of odor took place at the same periods as before.

---

* Balfour's Class-Book of Botany.

Observations have been made by Cöhler and Schübler,* in regard to odoriferous flowers as occurring in species belonging to certain orders in relation to their colors. They have formed a table of the colored flowers, which they examined according to their odoriferous qualities, and the colors which they bear.

COLORS.	Species.	Odoriferous.	Odors Agreeable.	Disagreeable Odors.
White, . .	1193	187	175	12
Yellow, . .	951	75	61	14
Red, . . .	923	85	76	9
Blue,. . .	594	31	23	7
Iris, . . .	307	23	17	6
Green (?),. .	153	12	10	2
Orange, . .	50	3	1	2
Brown, . .	18	1	—	1

As will be seen by the above Table, the white flowers are the most fragrant and pleasing to the smell, while the orange and brown colored flowers are of little use to the perfumer.

---

* Quoted by Balfour.

The *Monocotyledons* examined were found to contain 14 per cent. of odoriferous species, while the *Dicotyledons* only contain 10 per cent. In the case of the natural orders examined, the colors were associated with the odors as follows:

Natural Family.	Prevailing Color.	Odoriferous Flowers. Per cent.
Water Lily Family,	White and Yellow,	22
Rose,	Red, Yellow, and White,	13.1
Primrose,	White and Red,	12.3
Borage,	Blue and White,	5.9
Convolvulus,	Red and White,	4.13
Ranunculus,	Yellow,	4.11
Poppy,	Red and Yellow,	2
Campanula,	Blue,	1.31

In laying out a garden which we may desire to please us by its fragrance as well as its beauty, we cannot do better than be guided by the above facts in the selection of flowers to cultivate in it, nor can those who admire the paradisiacal perfume of a garden at evening's close neglect the growth of nocturnal flowers, without losing many pleasures derived from the particles which they throw into the "breath of life," so subtile and ethereal withal as to be beyond the material grasp of the chemical philosopher.

The extensive flower farms in the neighborhood of Nice, in Sardinia; Montpellier, Nîsmes, Grasse, and Cannes, in France; at Adrianople (Turkey in Europe); at Broussa and Uslak (Turkey in Asia); at Gazepore (India), and at Mitcham and Hitchin, in England, in a measure indicate the commercial importance of that branch of chemistry called Perfumery.

British India and Europe consume annually, at the very lowest estimate, 150,000 gallons! of perfumed spirits, under various titles, such as Hungary Water, Essence of Lavender, Esprit de Rose, &c. The art of Perfumery does not, however, confine itself to the production of scents for the handkerchief and bath, but extends to imparting odor to inodorous bodies, such as soap, oil, starch, and grease, which are consumed at the toilette of fashion. Some idea of the commercial importance of this art may be formed, when we state that one of the large perfumers of Cannes, M. Herman, employs annually 140,000 lbs. of orange flowers, 12,000 lbs. of cassie flowers, 140,000 lbs. of rose leaves, 32,000 lbs. of jasmine blossoms, 20,000 lbs. of violets, 8000 lbs. of tubereuse, 16,000 lbs. of cassie, besides rosemary, mint, lemon, citron, thyme, and other odorous plants in larger proportion. In fact, the quantity of odoriferous substances used in this way is far beyond the conception of those even used to abstract statistics.

FLOWER FARMING STATISTICS.

Thirty thousand *Jasmine* plants will occupy an area of land equivalent to 1500 metres (rather more than one-third of an acre), and will produce during the entire season, 1000 kilogrammes* of flowers.

Five thousand *Rose-tree* plants will occupy 1800 metres of land (nearly half an acre), and will produce 10 kilogrammes of rose flowers during the season.

One hundred *Orange-trees*, at the age of 10 years, will occupy 4000 metres of land (one acre), and will produce, during the season, 1000 kilogrammes of orange-flowers.

---

* The kilogramme is very nearly 2 lbs. 3 oz.

Eight hundred *Geranium* plants will occupy 200 metres of land, the produce of which, during the season, will be 1000 kilogrammes of geranium-flowers.

Violets.—5000 metres of land (1¼ acre) planted with violets, will produce 1000 kilogrammes of violet-flowers during the season.

Tuberose.—70,000 tuberose-roots will produce 1000 kilogrammes of flowers during the season, and will require 1000 metres of land (2½ acre) for their culture.

The annual produce of violet-flowers at Nice and at Cannes amounts to 25,000 kilogrammes (Grasse does not produce violets), the annual manufacture of which into oils and pomades is 12,000 kilogrammes; if, however, the produce furnished by the different manufacturers were genuine, they would not be able to produce more than 6000 kilogrammes of the essence in its pure state from the quantity of flowers just mentioned.

Nice produces 200,000 kilogrammes of orange-flowers annually.

The produce of orange-flowers at Cannes and the adjacent villages is 425,000 kilogrammes; these are of a much superior quality and in every way better adapted for manufacture than those of Nice, which are, indeed, fit for distillation only.

One thousand kilogrammes of orange-flowers produce 800 grammes of pure neroli; 600 kilogrammes of orange-flower leaves produce 1 kilogramme of pure petit grain.

Cannes produces annually from 16,000 to 18,000 kilogrammes of cassie-flowers. It may be remarked, that the cassie-flower is a product which belongs exclusively to the soil of Cannes, as the tree which produces it will not grow to perfection either at Nice or at Grasse. The last-named locality is also deficient in the production of orange-trees; these are obtained only from Cannes for the manufacture of pomades, and from Nice for distillation.

The flowers employed in the manufacture of perfumery, such as the rose, the jasmine, and the tuberose, are not so generally cultivated at Grasse as at Cannes.

The annual produce of Grasse and Cannes, and of the adjacent villages, is 40,000 kilogrammes of roses, 50,000 kilogrammes of jasmine, and 10,000 kilogrammes of tuberoses.

Orange-flower Waters.—According to the quantity of orange-flowers stated to be produced at Grasse, Cannes, and at Nice, not more than 465,000 litres or kilogrammes of orange-flower water can be either manufactured or distilled in a pure state with the quantity of orange-flowers supplied to the distillers by the manufacturers of pomades; whereas, the adulteration of this article is so great, that upwards of 1,000,000 kilogrammes of spurious orange-water is exported. It is, therefore, highly important that the distillation of these flowers should be subject to a strict surveillance.

This abuse may be remedied either by the institution of a commission for that purpose at Cannes, or by the appointment of an inspector, whose office should be to examine the distilled waters at the moment they leave the distiller's, and who should be empowered to punish severely in cases in which leaf-water, or any other fraudulent mixture, may be sold by him under the name of orange-flower water.

For my own part, it would give me great pleasure if the French government, whose solicitude for all matters concerning the public good is so great, would devote its attention to this important subject.

Grasse and Cannes manufacture annually:

Kilogs.		
150,000	of	pomades and scented oils.
250	of	pure otto of neroli.
450	"	otto of petit grain.
4,000	"	otto of lavender.
1,000	"	Roman essence.
1,000	"	otto of thyme.

The otto of neroli and of petit grain produced at Cannes are far superior in quality to those produced at Grasse. The reason for this difference is obvious, for as Grasse does not produce the flowers which are most generally used in the manufacture of perfumery, and can obtain them from Cannes only, a long time must necessarily elapse between the time of gathering them, and that of their manufacture, added to which also, their conveyance during the heat of summer is at all times detrimental.

It would be advantageous to the manufacturer, and also to the consumer, if the flowers were consumed in the locality in which they are produced, in order that they may be obtained in as fresh a state as possible. It is for this object that Cannes has witnessed the erection of a large perfumery establishment in the midst of the gardens of M. Louis Herman, which is certainly without an equal in the country, and, which, owing to the excellent condition of his productions, has not failed to gain for him much popularity for the excellence and superiority of his produce. This establishment manufactures annually from 38,000 to 40,000 kilogrammes of pomades and scented oils.

To the chemical philosopher, the study of Perfumery opens a book as yet unread; for the practical perfumer, on his laboratory shelves, exhibits many rare essential oils, such as essential oil of the flower of the *Acacia farnesiana*, essential oil of violets, tubereuse, jasmine, and others, the compositions of which have yet to be determined.

To the physicist, the study of Perfumery will show him that some hypothesis must yet be founded, on which he can hope to build up the laws by which different odors act upon the human intellect, in unison with its other faculties.

The exquisite pleasure derived from smelling fragrant flowers, would almost instinctively induce man to attempt to separate the odoriferous principle from them, so as to have the perfume when the season denies the flowers. Thus we find the alchemists of old torturing the plants in every way their invention could devise for this end; and it is on their experiments that the whole art of Perfumery has been reared.

SECTION IV.

—— "Should we chance to stray
Down by the hamlet's Hawthorn-scented way,
—— the sight is pleased,
The scent regaled; each odoriferous leaf,
Each opening blossom, freely breathes abroad
Its gratitude, and thanks HIM with its sweets."

WITHOUT recapitulating those facts which may be found diffused through nearly all the old authors on medical botany, chemistry, pharmacy, and works of this character, from the time of Paracelsus to Celnart, we may state at once the mode of operation adopted by the practical perfumer of the present day for preparing the various extracts or essences, waters, oils, pomades, &c., used in his calling.

The processes are divided into four distinct operations; viz.:

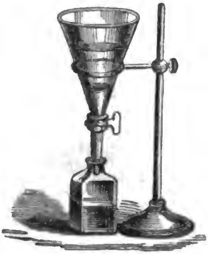
1. EXPRESSION; 2. DISTILLATION; 3. MACERATION;
4. ABSORPTION.

1. *Expression* is only adopted where the plant is very prolific in its volatile or essential oil,—*i. e.*, its odor; such, for instance, as is found in the pellicle or outer peel of the orange, lemon, and citron, and a few others. In these cases, the parts of the plant containing the odoriferous principle are put, sometimes in a cloth bag, and at others by themselves, into a press, and by mere mechanical force it is squeezed

out. The press is an iron vessel of immense strength, varying in size from six inches in diameter, and twelve deep, and upwards, to contain one hundredweight or more; it has a small aperture at the bottom to allow the expressed material to run for collection; in the interior is placed a perforated false bottom, and on this the substance to be squeezed is placed, covered with an iron plate fitting the interior; this is connected with a powerful screw, which being turned, forces the substance so closely together, that the little vessels containing the essential oils are burst, and it thus escapes. The common tincture-press is indeed a model of such an instrument. The oils which are thus collected are contaminated with watery extract, which exudes at the same time, and from which it has to be separated; this it does by itself to a certain extent, by standing in a quiet place, and it is then poured off, and filtered when requisite.

Pipette to draw off small portions of otto from water.

2. *Distillation.*—The plant, or part of it which contains the odoriferous principle, is placed in an iron, copper, or glass pan, varying in size from that capable of holding from one to twenty gallons, and covered with water; to the pan a dome-shaped lid is fitted, terminating with a pipe, which is twisted corkscrew fashion, and fixed in a bucket, with the end peeping out like a tap in a barrel. The water in the still—for such is the name of the apparatus—is made to boil; and having no other exit, the steam must pass through the coiled pipe; which, being surrounded with cold water in the bucket, condenses the vapor before it can arrive at the tap. With the steam, the volatile oil—*i. e.*, perfume—rises, and is liquefied at the same time. The liquids which thus run over, on standing for a time, separate into two portions, and are finally divided with a funnel having a stop-cock in the narrow part of it. By this process, the majority of the volatile ottos are procured. In some few instances alcohol—*i. e.*, rectified spirit of wine—is placed upon the odorous materials in lieu of water,



Tap funnel for separating otto from water and spirit from oil.

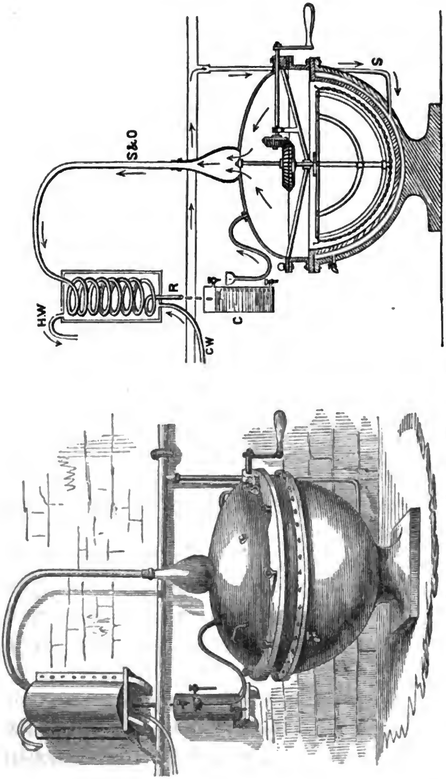
which, on being distilled, comes away with the perfuming substance dissolved in it. But this process is now nearly obsolete, as it is found more beneficial to draw the oil or essence first with water, and afterwards to dissolve it in the spirit. The low temperature at which spirit boils, compared with water, causes a great loss of otto, the heat not being sufficient to disengage it from the plant, especially where seeds, such as cloves or caraway, are employed.

The water used to keep the worms cool is supplied by natural springs, which flow to any part of the manufactory in inexhaustible quantities from the neighboring Estrelle Mountains. In this respect M. Pilar, of Grasse, is equally fortunate, the cost of such water being merely a small sum paid to the town every year. The French houses work their stills by the direct action of the fire to the still, which is liable to give an empyreumatic or burnt smell to the distillate; but in all the well-regulated perfumatories of Bond Street, London, the stills are worked by the steam, under ten or fifteen pounds' pressure, from a boiler.

The annexed illustration exhibits the best form and construction of still hitherto invented, the novel parts of which were patented by the firm of Drew, Heywood & Barron, whose ottos and essential oils are alike known for purity and quality.

The whole apparatus stands upon a massive foot. By examining the sectional drawing it will be seen that the pan is double, a hollow space existing between the inner and outer pan, technically termed the " steam jacket."

Steam is supplied from a boiler by the pipe s. The still is separable into two main parts, namely, the head and the pan; when in use they are firmly bolted together with screws, as shown in the drawing. Within the head of the still is fixed the "rouser," which



Syphon Still and Section.

is a double cross-bar, curved to fit the pan, to which is attached a chain, to drag over the bottom of the pan. The whole is set in motion by an assistant turning the handle outside in connection by the axle with the cog-wheels in the interior of the still.

Supposing the still to be charged, say with two hundredweight of cloves, water is supplied till the pan is nearly full; the head of the still is then bolted on. Steam being applied in the jacket, the water and cloves in the pan are soon brought to a boiling heat, and then, being well roused together, the otto of cloves is disengaged, and carried forward by the steam generated up the pipe marked S & O, and is quickly condensed in the refrigerator, running out at R, and falling into the cistern C.

Here the otto and the water spontaneously divide, the otto of cloves falling, and the water rising in the cistern. As soon as the water reaches the overflow-tap, it runs into the syphon funnel, thence into the still. Ingeniously simple as this syphon contrivance is, the whole merit of this form of still turns on the application of the syphon, by means of which the *same water*, which left the still in the form of steam, *returns again and again* into the pan. The pipes C, W, convey cold water from an outer tank to the refrigerator, while H, W, carry off the hot water produced by the condensations taking place in the worm pipe.

In cases where the otto disengaged from the material yielding it is lighter than water, then it is obvious that the lower tap of the cistern must be made to supply the syphon, in place of the upper one.

It is almost needless to say that the syphon must, in the first instance, be filled with water, in order to prevent the escape by that orifice of any fragrant vapor from the still; the pressure of vapor within is not then sufficient to overcome the weight of the short column of water in syphon. It so happens, however, that the finest odors, the *recherché*, as the Parisians say, cannot be procured by this method; then recourse is had to the next process.

3. *Maceration.*—This operation is conducted thus: For what is called pomade, a certain quantity of purified beef or deer suet, mixed with purified lard, is put into a clean metal or porcelain pan; this being melted by a steam heat or bath, the kind of flowers required for the odor wanted are carefully picked and put to the liquid fat, and allowed to remain from twelve to forty-eight hours; the fat has a particular affinity or attraction for the otto of flowers, and thus, as it were, draws it out of them, and becomes itself, by their aid, highly perfumed; the fat is strained from the spent flowers, and fresh are added ten or fifteen times over, till the pomade is of the required strength; these various strengths of pomatums are noted by the French makers as Nos. 6, 12, 18, and 24, the higher numerals indicating the amount of fragrance in them. For perfumed oils, the same operation is followed; but, in lieu of suet, fine olive oil, and the same results are obtained. These oils are called "Huile Antique" of such and such a flower.

The orange, rose, and cassie compounds are principally prepared by this process.

The violet and rézéda pomades and oils are prepared first by the maceration process, and then finished by *enfleurage*.

When neither of the three foregoing processes gives satisfactory results, the method of procedure adopted is by,

4. *Absorption* or *Enfleurage.*—Of all the processes for procuring the perfumes of flowers, this is the most important to the perfumer, and is the least understood in England; as this operation yields not only the most exquisite essence indirectly, but also nearly all those fine pomades known here as "French pomatums," so much admired for the strength of fragrance, together with "French oils," equally perfumed. The odors of some flowers are so delicate and volatile, that the heat required in the previously named processes would greatly modify, if not entirely spoil, them; this process is, therefore, conducted cold, thus: Square frames, called a *châssis*, about three inches deep, with a glass bottom, say two feet wide and three feet long, are procured; over the glass a layer of fat is spread, about a quarter of an inch thick, with a kind of plaster-knife or spatula; on this the flower-buds are sprinkled, completely over it, and there left from twelve to seventy-two hours.

Some houses, such as that of Messrs. Pilar & Sons, Pascal Brothers, L. Herman, and a few others, have 3000 such frames at work during the season; as they are filled, they are piled one over the other; the flowers are changed so long as the plants continue to bloom, which now and then exceeds two or three months.

For oils of the same plants, coarse cotton cloths are imbued with the finest olive oil, and laid upon a frame containing wire gauze in lieu of glass; on these the flowers are laid, and suffered to remain till fresh flowers are procured.

This operation is repeated several times, after which the cloths are subject to a great pressure, to remove the now perfumed oil.

As we cannot give any general rule for working, without misleading the reader, we prefer explaining the process required for each when we come to speak of the individual flower or plant.

SECTION V.

> Me seem'd I smelt a garden of sweet flow'rs,
> That dainty odors from them threw around
> For damsels fit to deck their lovers' bow'rs.
>
> SPENSER.

THE perfumes for the handkerchief, as found in the shops of Paris and London, are either simple or compound; the former are called extracts, *extraits*, *esprits*, or essences, and the latter *bouquets* or nosegays, which are mixtures of the extracts so compounded in quantity that no one flower or odor can be discovered as predominating over another; and when made of the delicate-scented flowers carefully blended, they produce an exquisite sensation on the olfactory nerve, and are therefore much prized by all who can afford to purchase them.

We shall first explain the mode for obtaining the simple extracts of flowers. This will be followed by the process for preparing ambergris, musk, and civet substances, which, though of animal origin, are of the utmost importance as forming a large part in the most approved bouquets; and we shall conclude this department of the art with recipes for all the fashionable bouquets and nosegays, the value of which, we doubt not, will be estimated according to the labor bestowed upon their analysis.

In order to render the work more easy of consultation, we have adopted the alphabetical arrangement in preference to a more scientific classification.

Among the collection of ottos of the East India Company at the Exhibition of 1851, were several hitherto unknown in this country, and possessing much interest.

It is to be regretted, that no person having any *practical* knowledge of Perfumery was placed on the jury of Class IV or XXIX. Had such been the case, the desires of the exhibitors would probably have been realized, and European perfumers benefited by the introduction of new odors from the East. Some of the ottos sent by a native perfumer of Benares were deemed worthy of honorable mention,—such as *Chumeylee*, *Beyla*, *Begla*, *Moteya*, and many others from the Moluccas, but without any information respecting them.

We are not going to speak of, perhaps, more than a tithe of the plants that have a perfume—only those will be mentioned that are used by the operative perfumer, and such as are imitated by him in consequence of there being a demand for the article, which circumstances prevent him from obtaining in its genuine state. The first that comes under our notice is

ALLSPICE.—The odoriferous principle of allspice, commonly called pimento, is obtained by distilling the dried fruit, before it is quite ripe, of the *Eugenia pimenta* and *Myrtus pimenta* with water. It is thus procured as an essential oil; it is but little used in perfumery, and when so, only in combination with other spice oils for scenting soap; it is, however, very agreeable, and much resembles the smell of cloves, and deserves more attention than it has hitherto received. Mixed in the proportion of three ounces of oil of allspice with one gallon of rectified spirit of wine, it forms what may be termed extract of allspice, which extract will be found very useful in the manufacture of low-priced bouquets.—See PIMENTO.

ALMONDS.

> Mark well the flow'ring almond in the wood;
> If od'rous blooms the bearing branches load,
> The glebe will answer to the sylvan reign,
> Great heats will follow, and large crops of grain.
> VIRGIL.

This perfume has been much esteemed for many ages. It may be procured by distilling the leaves of any of the laurel tribe, and the kernels of stone fruit; for trade purposes, it is obtained from the bitter almond, and exists in the skin or pellicle that covers the seed after it is shelled. In the ordinary way, the almonds are put into the press for the purpose of obtaining the mild or fat oil from the nut; the cake which is left after this process is then mixed with salt and water, and allowed to remain together for about twenty-four hours prior to distillation. The reason for moistening the cake is well understood by

Almond.

the practical chemist, and although we are not treating the subject of perfumery in a chemical sense, but only in a practical way, it may not be inappropriate here to observe, that the essential oil of almonds does not exist ready formed to any extent in the nut, but that it is produced by a species of fermentation, from the amygdalin and emulsine contained in the almonds, together with the water that is added. Analogous substances exist in laurel leaves, and hence the same course is to be pursued when they are distilled. Some manufacturers put the moistened cake into a bag of coarse cloth, or spread it upon a sieve, and then force the steam through it; in either case, the essential oil of the almond rises with the watery vapor, and is condensed in the still-worm. Fourteen pounds of the cake yield about one ounce of essential oil. In this concentrated form, the odor of almonds is far from agreeable; but when diluted with spirit, in the proportion of about one and a half ounce of the oil to a gallon of spirit or alcohol, it is very pleasant.

The essential oil of almonds enters into combination with soap, cold cream, and many other materials prepared by the perfumer; for which see their respective titles.

In experiments with this substance it must be carefully remembered that it is exceedingly *poisonous*, and, therefore, great caution is necessary in its admixture with substances used as a cosmetic, otherwise dangerous results may ensue.

Artificial Otto of Almonds, otherwise *Miribane*.—Ten or twelve years ago, Mr. Mansfield, of Weybridge, took out a patent for the manufacture of otto of almonds from benzole. (Benzole is obtained from tar oil.) His apparatus, according to the Report of the juries of the 1851 Exhibition, consists of a large glass tube in the form of a coil, which at the upper end divides into two tubes, each of which is provided with a funnel. A stream of nitric acid flows slowly into one of the funnels, and benzole into the other. The two substances meet at the point of union of the tubes, and a combination ensues with the evolution of heat. As the newly formed compound flows down through the coil it becomes cool, and is collected at the lower extremity; it then requires to be washed with water, and lastly with a dilute solution of carbonate of soda, to render it fit for use. Nitro-benzole, which is the chemical name for this artificial otto of almonds, has a different odor to the true otto of almonds, but it can nevertheless be used for perfuming soap. The late Mr. Mansfield wrote to me under date January 3d, 1855: "In 1851, Messrs. Gosnell, of Three King Court, began to make this perfume under my license; latterly I withdrew the license from them by their consent, and since then it is not made that I am aware of." Notwithstanding this remark of Mr. Mansfield, there is plenty of Miribane in the London market, and it is quite common in Paris.

ANISE.—The odorous principle is procured by distilling the seeds of the plant *Pimpinella anisum;* the product is the oil of aniseed of commerce. As it congeals at a temperature of about 50° Fahr., it is frequently adulterated with a little spermaceti, to give a certain solidity to it, whereby other cheaper essential oils can be added to it with less chance of detection. As the oil of aniseed is quite soluble in spirit, and the spermaceti insoluble, the fraud is easily detected.

This perfume is exceedingly strong, and is, therefore, well adapted for mixing with soap and for scenting pomatums, but does not do nicely in compounds for handkerchief use. The Portuguese are very fond of Anise.

Balm, otto of Balm, called also oil of Melissa, is obtained by distilling the leaves of the *Melissa officinalis* with water; it comes from the still tap with the condensed steam or water, from which it is separated with the tap funnel. But it is very little used in perfumery, if we except its combination in *Aqua di Argento.*

Balsam.—Under this title there are three substances used in perfumery: these are balsam of Peru, balsam of Tolu, and balsam of storax. The first-named is procured from the *Myroxylon peruiferum;* it exudes from the tree when wounded, and is also obtained by boiling down the bark and branches in water. The latter is the most common method of procuring it. It has a strong odor, like benzoin and vanilla mixed. —See Peru.

Balsam of Tolu flows from the *Toluifera balsamum.* It resembles common resin (rosin); with the least warmth, however, it runs to a liquid, like brown treacle. The smell of it is particularly agreeable, and being soluble in alcohol, makes a good basis for a bouquet, giving in this respect a permanence of odor to a perfume which the simple solution of an oil would not possess. For this purpose all these balsams are very useful, though not so much used as they might be. The proportions are: Balsam of

Tolu, ½ lb.: spirit, 60 o. p. 1 gallon.—See STORAX and TOLU.

ULEX has found that balsam of Tolu is frequently adulterated with common resin. To detect this adulteration he pours sulphuric acid on the balsam, and heats the mixture, when the balsam dissolves to a cherry-red fluid, without evolving sulphurous acid, but with the escape of benzoic or cinnamic acid, if no common resin is present. On the contrary, the balsam foams, blackens, and much sulphurous acid is set free, if it is adulterated with common resin. —*Arch. der Pharmacie.*

Balsam of storax, commonly called gum styrax, is obtained in the same manner, and possessing similar properties, with a slight variation of odor, is applicable in the same manner as the above.

They are all imported from South America, Chili, and Mexico, where the trees that produce them are indigenous.

The genuine balsam of Mecca (*Gum amyris opobalsam*) is both scarce and expensive. The kings of Judah cultivated this shrub, but only to a very small extent. It will be interesting to learn, that a bottle of this extraordinary balsam is kept at the botanical garden at Paris, as an object of the rarest and highest value. What is generally sold by the name of Balsam of Mecca is merely the oil, obtained by boiling, from the seeds, stones, and branches of the tree. It is too rare to be purchased at any price, as is generally supposed to be. Josephus informs us that the Queen of Sheba brought it first to Judea, where balsam, myrrh, and incense, in the days of old, were to be seen used by the populace in abundance, almost daily. This is one of the many things which we "mourn for" in the "days gone by." The reason of its excessive scarcity is supposed to be owing to the destruction of Jerusalem: the Jews, actuated by despair and hatred, destroyed all the balsam plants. There are none now to be found in Palestine. Only one plantation is now known to furnish it, and that is in Arabia Petrea. The whole plantation only yields about three pounds annually, and it is monopolized by the Grand Seignior. This, of course, we can scarcely refrain from noticing without an expression of regret.

BAY.—Oil of sweet Bay, also termed essential oil of laurel-berries, is a very fragrant substance, procured by distillation from the berries of the bay laurel (*Laurus nobilis*). Though very pleasant, it is not much used.

BERGAMOT.—This most useful perfume is procured from the *Citrus bergamia*, by expression from the peel of the fruit. One hundred fruit will yield about three ounces of the otto. It has a soft sweet odor, too well known to need description here. When new and good it has a greenish-yellow tint, but loses its greenness by age, especially if kept in imperfectly corked bottles. It then becomes cloudy from the deposit of resinous matter, produced by the contact of the air, and acquires a turpentine smell.

It is best preserved in well-stoppered bottles, kept in a cool cellar, and in the dark; light, especially the direct sunshine, quickly deteriorates its odor. This observation may be applied, indeed, to all perfumes, except rose, which is not so spoiled.

When bergamot is mixed with other essential oils, it greatly adds to their richness, and gives a sweetness to spice oils attainable by no other means, and such compounds are much used in the most highly-scented soaps. Mixed with rectified spirit in the proportions of about eight ounces of bergamot to a gallon, it forms what is called "extract of bergamot," and in this state is used for the handkerchief. Though well covered with extract of orris and other matters, it is the leading ingredient in Bayley & Blew's Ess. Bouquets.—See BOUQUETS.

BENZOIN, also called BENJAMIN.—This is a very useful substance to perfumers. It exudes from the *Styrax benzoin* by wounding the tree, and drying, becomes a hard gum-resin. It is principally imported from Borneo, Java, Sumatra, and Siam. The best kind comes from the latter place, and used to be called Amygdaloides, because of its being interspersed with several white spots, which resemble broken almonds. When heated, these white specks rise as a smoke, which is easily condensed upon paper. The material thus separated from the benzoin is called flowers of benzoin in commerce, and

Styrax benzoin.

by chemists is termed benzoic acid. It has nearly all the odor of the resin from which it is derived; but which is due to a minute portion of a peculiar otto that rises in vapor with the acid. This otto of benzoin has not yet been isolated. When benzoic acid is prepared by the humid process, as is often done in the chemical laboratory, it has *no odor*. It may be, however, that the benzoic acid undergoes decomposition when prepared from the gum resin by sublimation, and thus produces the fragrant body which is wanting in that made in the wet way. This is probable, for gum benzoin has but little or less odor than the acid sublimated from it.

Mr. W. Bastick recommends the following process for making flowers of benzoin. Coarsely powdered gum benzoin is to be strewed on the flat bottom of a round iron pot, which has a diameter of nine inches and a height of about two inches. On the surface of the pot is spread a piece of filtering paper, which is fastened to its rim by starch paste. A cylinder of very thick paper is attached by means of a string to the top of the iron pot. Heat is then applied by placing the pot on a plate covered with sand, over the mouth of a furnace. It must remain exposed to a gentle fire from four to six hours. About an ounce and a half of benzoic acid is obtained from twelve ounces of gum benzoin by the first sublimation. As the gum is not exhausted by the first operation, it may be bruised when cold and again submitted to the action of heat, when a fresh portion of benzoic acid will sublime from it. This acid thus obtained is not perfectly pure and white, and Dr. Mohr states that it is a question, in a medicinal and perfumery point of view, whether it is so valuable when perfectly pure as when it contains a small portion of a fragrant volatile oil which rises with it from the gum in the process of sublimation.

The London Pharmacopœia directs that it shall be prepared by sublimation, and does not prescribe that it shall be free from this oil, to which it principally owes its agreeable odor.

By the second sublimation the whole of the benzoic acid is not volatilized. What remains in the resin may be separated by boiling it with caustic lime, and precipitating the acid from the resulting benzoate of lime with hydrochloric acid. Benzoic acid can be obtained also in the wet way, and the resin yields a greater product in this process than in the former; yet it has a less perfumery value, because it is free from the volatile oil which, as above stated, gives it its peculiar odor. The wet method devised by Scheele is as follows: Make one ounce of freshly burnt lime into a milk with from four to six ounces of hot water. To the milk of lime, four ounces of powdered benzoin and thirty ounces of water are to be added, and the mixture boiled for half an hour, and stirred during this operation, and afterwards strained through linen. The residue must be a second time boiled with twenty ounces of water and strained, and a third time with ten ounces: the fluid products must be mixed and evaporated to one-fourth of their volume, and sufficient hydrochloric acid added to render them slightly acid. When quite cold, the crystals are to be separated from the fluid by means of a strainer, upon which they are to be washed with cold water, and pressed, and then dissolved in hot distilled water, from which the crystals separate on cooling. When hydrochloric acid is added to a cold concentrated solution of the salts of benzoic acid, it is precipitated as a white powder. If the solution of the salts of this acid is too dilute and warm, none or only a portion of the benzoic acid will be separated. However, the weaker the solution is, and the more slowly it is cooled, the larger will be the crystals of this acid. In the preparation of this acid in the wet way, lime is to be preferred to every other base, because it forms insoluble combinations with the resinous constituents of the benzoin, and because it prevents the gum resin from conglomerating into an adhesive mass, and also because an excess of this base is but slightly soluble.

The best benzoin is obtained in Siam by incisions made in the trunk of the tree, after it has attained the age of five or six years. The resin is white and transparent at first. About three pounds are given by each tree for about six years. It forms an article of export from Siam. From Singapore, the exports in 1852 were to the extent of 1282 piculs, and 168 piculs in 1853. Java imported last year benjamin of the value of 176,182 florins. The different varieties bear a price proportioned to their goodness; the finest quality used to range from 10*l.* to 20*l.* per picul of 133 lbs. Benzoin is the frankincense of the far East, and has long been used for incense in the Roman Catholic, the Hindu, Mahometan, and Budhistic temples, and probably in the Israelitish worship. Wealthy Chinese fumigate their houses with its grateful odor.—P. L. SIMONDS, ESQ.: (*read before the Society of Arts*).

The extract, or tincture of benzoin, forms a good basis for a bouquet. Like balsam of Tolu, it gives permanence and body to a perfume made with an essential oil in spirit.

The principal consumption of benzoin is in the manufacture of pastilles (see PASTILLES), and for the preparation of fictitious vanilla pomade. (See POMATUMS.)

BRIER (SWEET).—See EGLANTINE.

CARAWAY.—This odoriferous principle is drawn by distillation from the seeds of the *Carum Carui.* It has a very pleasant smell, quite familiar enough without description. It is well adapted to perfume soap, for which it is much used in England, though rarely if ever on the Continent; when dissolved in spirit it may be used in combination with oil of lavender and bergamot for the manufacture of cheap essences, in a similar way to cloves. (See CLOVES.) If caraway seeds are ground, they are well adapted for mixing to form sachet powder. (See SACHETS.)

CASCARILLA.—The bark is used in the formation of Frangipani incense, and also enters into the composition known as *Eau à Brûler*, for perfuming apartments, to which we refer.

The bark alone of this plant is used by the manufacturing perfumer. The *Cascarilla gratissima* is however so fragrant that, according to Burnett, its leaves are gathered by the Koras of the Cape of Good Hope as a perfume. It behooves perfumers, therefore, who are on the look-out for novelties, to obtain these leaves and ascertain the result of their distillation.

Messrs. Herring & Co., some years ago, drew the oil of cascarilla, but it was only offered to the trade as a curiosity.

The cascarilla (meaning "little bark," in Spanish) of commerce is derived, according to Sir W. Hooker, from the *Croton fragrans*, a native plant of South America.

Camphor.—This beautiful and fragrant substance is produced by several plants, particularly *Dryobalanops Camphora*, the Camphor tree of Sumatra and Japan. The kind, however, mostly found in commerce is derived from the *Laurus Camphora*, or camphor laurel of the island of Formosa, carried thence to Canton, from which port the markets of the world are supplied. The camphor exists naturally within the tree ready formed: on splitting the wood, it is found in masses twelve to eighteen inches long, between the bark and the stem, and in the pith. There is a race of men called Nyr-Cappoors, or camphor-seers, who pretend to have the power of distinguishing the most profitable trees to fell. Many trees are, however, cut down at their instigation, without having any cryptæ of camphor in them. Every part of the *Laurus Camphora* contains camphor, which is extracted by chopping the branches and boiling them in water. The camphor rises to the surface, and becomes solid as the water cools: in some instances, the boiler in which the operation is conducted is covered with an earthen dome lined with rice-straw; as the water boils, the camphor rises with the steam, and attaches itself to the straw, from which it is afterwards picked, and then packed for exportation.

The camphor as found in the shops in England is "refined," and is not in the original condition in which it is brought to Europe. The purification or refining of camphor was at one time held as a monopoly at Venice, but is now done in all the large cities of Europe. The process is simple, and consists of mixing the imported camphor with a little lime, and subjecting it to a heat sufficient to convert it to vapor, which readily condenses into the form of the receiver. The odor of camphor is very characteristic, and to the majority of people very agreeable. It has the reputation of being highly prophylactic, and to this end is worn about the person in time of sickness; from its reputed antiseptic qualities, it is extensively used in the manufacture of dentifrices, soap, aromatic vinegars, and other toilet appendages.

CASSIA.—The essential oil of cassia is procured by distilling the outer bark of the *Laurus Cassia*. One cwt. of bark yields rather more than three quarters of a pound of oil; it has a pale yellow color; in smell it much resembles cinnamon, although very inferior to it. It is principally used for perfuming soap, especially what is called "military soap," as it is more aromatic or spicy than flowery in odor; it therefore finds no place for handkerchief use.

CASSIE.

> The short narcissus and fair daffodil,
> Pansies to please the sight, and *cassie* sweet to smell.
>
> DRYDEN'S *Virgil.*

This is one of those fine odors which enter into the composition of the best handkerchief bouquets. When smelled at alone, it has an intense violet odor, and is rather sickly sweet.

It is procured by maceration from the *Acacia farnesiana*. Purified fat is melted in the Bain Marie, into which the flower-heads are thrown, and left to digest for several hours; the spent flowers are then removed, and fresh are added, eight or ten times, until sufficient richness of perfume is obtained. As many flowers are used as the fluid grease will cover, when they are put into it. The value of cassie buds is from five francs to eight francs the kilogramme, and it requires two kilogrammes of flowers to perfume one kilogramme of grease.

After being strained, and the pomade has been kept at a heat sufficient only to retain its liquidity, all impurities will subside, by standing for a few days. Finally cooled, it is the cassie pomade of commerce. The *Huile de Cassie*, or fat-oil of cassie, is prepared in a similar manner, substituting olive oil or almond oil in place of suet. Both these preparations are obviously only a solution of the true essential oil of cassie flowers in the neutral fatty body. Europe may shortly be expected to import a similar scented pomade from South Australia, derived from the wattle, a plant that belongs to the same genus as the *A. farnesiana*, and which grows most luxuriantly in Australia. Mutton fat being cheap, and the wattle plentiful, a profitable trade may be anticipated in curing the flowers, &c.

To prepare the *extract of cassie*, take six pounds of No. 24 (best quality) cassie pomade, and place upon it one gallon of the best rectified spirit, as sent out by Bowerbank, of Bishopsgate. After it has digested for three weeks or a month, at a summer heat, it is fit to draw from the pomatum, and, if good, has a beautiful olivaceous green color and rich flowery smell of the cassie blossom. All extracts made by this process give a more natural smell of the flowers to the result, than by merely dissolving the essential oil (procured by distillation) in the spirit; moreover, where the odor of the flower exists in only very minute quantities, as in the present instance, and with violet, jasmine, &c., it is the only practical mode of proceeding.

In this and all other similar cases, the pomatum must be cut up into very small pieces, after the domestic manner of " chopping suet," prior to its being infused in the alcohol. The action of the mixture is simply a change of place in the odoriferous matter, which leaves the fat body by the superior attraction, or affinity, as the chemists say, of the spirits of wine, in which it freely dissolves.

The major part of the extract can be poured or drawn off the pomatum without trouble, but it still retains a portion in the interstices, which requires time to drain away, and this must be assisted by placing the pomatum in a large funnel, supported by a bottle, in order to collect the remainder. Finally, all the pomatum, which is now called *washed pomatum*, is to be put into a tin or copper can, which can must be set in hot water, for the purpose of melting its contents; when the pomatum thus becomes liquefied, any extract that is still in it rises to the surface, and may be skimmed off; or, when the pomatum becomes cold, it can be poured from it.

The washed pomatum is preserved for use in the manufacture of dressing for the hair, for which purpose it is exceedingly well adapted, on account of the purity of the grease from which it was originally prepared, but more particularly on account of a certain portion of odor which it still retains; and were it not used up in this way, it would be advisable to put it for a second infusion in spirit, and thus a weaker extract could be made serviceable for lower priced articles.

I cannot leave cassie without recommending it more especially to the notice of perfumers and druggists, as an article well adapted for the purpose of the manufacture of essences for the handkerchief and pomades for the hair. When diluted with other odors, it imparts to the whole such a true flowery fragrance, that it is the admiration of all who smell it, and has not a little contributed to the great sale which certain proprietary articles have attained.

We caution the inexperienced not to confound cassie with cassia, which has a totally different odor. See Acacia Pomade.

Cedar.—This wood has been famous since the days of Solomon, who employed it in the construction of the Temple. The wood now and then finds a place in a perfumer's warehouse; when ground, it does well to form a body of sachet powder. Slips of cedar wood are sold as matches for lighting lamps, because, while burning, an agreeable odor is evolved; some people use it also in this condition, distributed among clothes in drawers to "prevent moth." On distillation it yields an essential oil that is exceedingly fragrant, and which is used extensively for scenting what is called cold cream soap.

LEBANON CEDAR WOOD.

For the Handkerchief.

Otto of cedar,	1 oz.
Rectified spirit,	1 pint.
Esprit rose trip,	¼ pint.

Since the publication of the first edition of this work, otto of cedar wood, which was very scarce, has been sent extensively into the market. Messrs. Hodgkinson & Co., of Snow Hill, have produced 28 ounces from the cwt. of shavings, being the refuse of the pencil-makers. The pencil cedar is the "Virginian" or American cedar, *Juniperus Virginiana.* The true Lebanon cedar, *Cedrus Libani*, and from which the handkerchief perfume is *named!* yields a very indifferent otto and odor to the American plant. The "Cedars of Lebanon" are so familiar, however, that perfumers could not afford to change the title of the scent they make, for the red wood of the West, though the latter is superior to the former in fragrance.

Cedria, an oil or resin extracted from a cedar, was, according to Vitruvius (a celebrated architect in the age of Augustus), used to smear over the leaves of the papyrus to prevent the attack of insects; and Pliny states that the Egyptians applied it with other drugs in the preparation of their mummies.

The tincture of cedar smells agreeably of the wood, from which it can readily be made by steeping the cedar wood in proof spirit. Its crimson color, however, prohibits it from being used for the handkerchief. It forms an excellent tincture for the teeth, and is the basis of the celebrated French dentifrice "*Eau Botot.*"

CEDRAT.—This perfume is procured from the rind of the citron fruit (*Citrus medica*), both by distillation and expression; it has a very beautiful lemony odor, and is much admired. It is principally used in the manufacture of essences for the handkerchief, being too expensive for perfuming grease or soap. What is called extract of cedrat is made by dissolving two ounces of the above essential oil of citron in one pint of spirits, to which some perfumers add half an ounce of bergamot.

CINNAMON.—Several species of the plant *Laurus Cinnamomum* yield the cinnamon and cassia of commerce. Its name is said to be derived from *China Amomum*, the bark being one of the most valued spices of the East. Perfumers use both the bark and the oil, which is obtained by distillation from it. The ground bark enters into the composition of some pastilles, tooth powders, and sachets. The essential oil of cinnamon is principally brought to this country from Ceylon; it is exceedingly powerful, and must be used sparingly. In such compounds as cloves answer, so will cinnamon.

Artificial Preparation of Oil of Cinnamon.—Some years since Strecker showed that styrone, which is obtained when styracine is treated with potash, is the alcohol of cinnamic acid. Wolff has converted this alcohol, by oxidizing agents, into cinnamic acid. The author has now proved that under the same conditions by which ordinary alcohol affords aldehyde, styrone affords the aldehyde of cinnamic acid, that is, oil of cinnamon. It is only necessary to moisten platinum black with styrone, and let it remain in the air some days, when by means of the bisulphate of potash the aldehyde double compound may be obtained in crystals, which should be washed in ether. By the addition of diluted sulphuric acid, the aldehyde of cinnamic acid is afterwards procured pure. These crystals also dissolve in nitric acid, and then form, after a few moments, crystals of the nitrate of the hyduret of cinnamyle. The conversion of styrone into the hyduret of cinnamyle by the action of the platinum black is shown by the following equation: $C_{18} H_{10} O_2 + 2 O = C_{18} H_8 O_2 + 2 HO$.—*Comptes Rendus.*

CITRON.

> Sharp-tasted citron, Median climes produce;
> Large is the plant, and like a laurel grows;
> And, did it not *a different scent* disclose,
> A laurel were. VIRGIL, *Georgics*, II, 180.

On distilling the flowers of the *Citrus medica*, a very fragrant oil is procured, which is a species of neroli, and is principally consumed by the manufacturers of Hungary water.

CITRONELLA.—Under this name there is an oil in the market, chiefly from Ceylon. It is procured by distilling the leaves of the *Andropogon Schœnanthus*, which grows wild, and is very abundant in Ceylon. In the neighborhoods of Galle and of Colombo, in that island, large tracts of land are under cultivation of this plant, for the express purpose of procuring the odoriferous principle.

The average export of citronella from the port of Colombo is about 4000 lbs. annually. Mr. Thwaites, of the Royal Botanic Gardens, has kindly promised to send me growing plants of the citronella, which I shall deposit at Kew, or in Regent's Park Gardens, as soon as they come to hand.*

Citronella being cheap (the export price at Colombo is 4*s.* 1*d.* per pound!), it is extensively used for perfuming soap. What is now extensively sold as "honey" soap is a fine yellow soap slightly perfumed with this oil. Some few use it for scenting grease, but it is not much admired in that way.

---

* Letter dated August 14th, 1856.

Cloves.—Every part of the clove plant (*Caryophyllus aromaticus*) abounds with aromatic oil, but it is most fragrant and plentiful in the unexpanded flower-buds, which are the cloves of commerce. Cloves have been brought into the European market for more than 2000 years. The plant is a native of the Moluccas and other islands in the Chinese seas. "The average annual crop of cloves," says Burnett, "is from each tree 2 or 2½ lbs.; but a fine tree has been known to yield 125 lbs. of this spice in a single season, and as 5000 cloves only weigh one pound, there must have been at least 625,000 flowers upon this single tree."

Clove.

The otto of cloves may be obtained by expression from the fresh flower-buds, but the usual method of procuring it is by distillation, which is carried on to a very great extent in this country. Few essential oils have a more extensive use in perfumery than that of cloves; it combines well with grease, soap, and spirit, and, as will be seen in the recipes for the various bouquets given hereafter, it forms a leading feature in some of the most popular handkerchief essences —Rondeletia, the Guards' Bouquet, &c.—and will be found where least expected. For essence of cloves, dissolve oil of cloves in the proportion of four ounces of oil to one gallon of spirit.

Cucumber.—Considerable difference of opinion exists among the public as to the odor of cucumber. Some greatly admire it, and think it has many virtues; others there are who think well of it on the sideboard, but would expunge it from the toilet-table. Our business is not, however, to give opinion, but to state the mode of procuring the odor of the plant. We have been unable to procure any otto of cucumber, and the "water" distilled from it has but a very faint resemblance to the fruit: if, however, spirits of wine be repeatedly distilled over freshly-cut cucumbers, we finally obtain, at about the third distillation, a spirit or essence having all the true odor we are in search of. Its principal use is in making cucumber cold cream, &c., which see.

Dill.—Perfumers are now and then asked for "dill-water;" it is, however, more a druggist's article than a perfumer's, as it is more used for its medicinal qualities than for its odor, which, by the way, is rather pleasant than otherwise. Some ladies use a mixture of half dill-water and half rose-water, as a simple cosmetic, "to clear the complexion."

The oil of dill is procured by submitting the crushed fruit of dill (*Anethum graveolens*) with water to distillation. The oil floats on the surface of the distillate, from which it is separated by the funnel in the usual manner; after the separation of the oil, the "water" is fit for sale. Oil of dill may be used with advantage, if in small proportions, and mixed with other oils, for perfuming soap.

EGLANTINE, or SWEET-BRIER, notwithstanding what the poet Robert Noyes says,

> In fragrance yields,
> Surpassing citron groves or spicy fields,

does not find a place in the perfumer's "scent-room," except in name. This, like many other sweet-scented plants, does not repay the labor of collecting its odor. The fragrant part of this plant is destroyed more or less under every treatment that it is put to, and hence it is discarded. As, however, the article is in demand by the public, a species of fraud is practised upon them, by imitating it thus:

IMITATION EGLANTINE, or ESSENCE OF SWEET-BRIER.

Spirituous extract of French rose pomatum,	1 pint.
" " Cassie,	¼ pint.
" " Fleur d'orange,	¼ pint.
Esprit de rose,	¼ pint.
Oil of neroli,	½ drachm.
Oil of lemon-grass (verbena oil),	½ drachm.

ELDER (*Sambucus nigra*).—The only preparation of this plant, for its odorous quality, used by the perfumer, is elder-flower water. To prepare it, take nine pounds of elder-flowers, free from stalk, and introduce it to the still with four gallons of water; the first three gallons that come over is all that need be preserved for use; one ounce of rectified spirits should be added to each gallon of "water" distilled, and when bottled it is ready for use.

KREMBS recommends the following process for making a concentrated elder-flower water, from which he states the ordinary water can be extemporaneously prepared, of excellent quality, and of uniform strength:

> 12 lbs. of the flowers are to be distilled with water until that which passes into the receiver has lost nearly all perfume. This will generally happen when from 15 to 18 pounds have passed over. To the distillate, 12 lbs. of alcohol are to be added, and the mixture distilled until about 5 lbs. are collected. This liquor contains all the odor of the flowers. To make the ordinary water, 2 ounces of the concentrated water are to be added to 10 ounces of distilled water.—*Buchner's Repert.*

Other preparations of elder-flowers are made, such as milk of elder, extract of elder, &c., which will be found in their proper place under Cosmetics. Two or three new materials made from this flower will also be given hereafter, which are likely to meet with a very large sale on account of the reputed cooling qualities of the ingredients; of these we would call attention more particularly to cold cream of elder-flowers, and to elder oil for the hair.

The preparations of the elder-flowers, if made according to the Pharmacopœias, are perfectly useless, as the forms therein given show an utter want of knowledge of the properties of the materials employed.

FENNEL (*Fœniculum vulgare*).—Dried fennel herb, when ground, enters into the composition of some sachet powders. The oil of fennel, in conjunction with other aromatic oils, may be used for perfuming soap. It is procurable by distillation.

FLAG (SWEET) (*Acorus Calamus*).—The roots, or rhizome, of the sweet flag, yield by distillation a pleasant-smelling oil; 1 cwt. of the rhizome will thus yield one pound of oil. It can be used according to the pleasure of the manufacturer in scenting grease, soap, or for extraits, but requires other sweet oils with it to hide its origin.

FRANGIPANI (*Plumeria Alba*).—This plant, which is said to yield the "eternal perfume," so popular at the present day, is a native of the West India Islands. In Antigua and at St. Domingo it grows in great abundance. Having, through my friend H. Bridger, Esq., of the former place, obtained a few of the plants, I forwarded them to the Royal Gardens, Kew. The following remarks thereon by Sir W. Hooker are worthy of record:

ROYAL GARDENS, KEW, August 14.

MY DEAR SIR:

I thank you much for the Frangipani plants. One and one only shows life; but I have every reason to think it will recover, and then, and not till then, we shall see exactly what species of Plumeria it is.

I do not find in your work that the odor of the flowers is preserved and used in this country. A French author (Descoursilz, in his Flore des Antilles) says, "Les parfumeurs recherchent cette odeur fugace, qu'ils savent fixer dans leurs pommades et leurs huiles cosmétiques." This is said of Plumeria *alba;* but all the species, and there are several, have the same agreeable odor when living. *Our* Floras of the West Indies do not speak of such a use being made of the flowers. You have the power of imitating it from other vegetables.

On looking further into this subject, I find it stated by Sir James Smith that the French name of all the species is Frangipani, and that they are so called from the resemblance of their fragrance to a well-known perfume of France, "*Frangipani;*" its inventor, an Italian, was of the *Frangipani family*, so conspicuous in the Roman disturbances.

I suspect then that no perfume is derived from these flowers: the *real Frangipani* being derived from other flowers, as described in your work, 2d edition.

Very truly yours,
W. J. HOOKER.

P. S. The juice of all the Plumerias is milky and very poisonous. One species was in flower with us last week.

To S. PIESSE, ESQ.

Geranium (*Pelargonium odoratissimum*, rose-leaf geranium).—The leaves of this plant yield by distillation a very agreeable rosy-smelling otto, so much resembling real otto of rose that it is used very extensively for the adulteration of that valuable scent, and is grown very largely for that express purpose. It is principally cultivated in the south of France, and in Turkey (by the rose-growers). In the department of Seine-et-Oise, at Montfort-Lamaury, in France, hundreds of acres of it may be seen growing. One hundredweight of leaves will yield about two ounces of essential oil. Used to adulterate otto of rose, it is in its turn itself adulterated with ginger-grass oil (*Andropogon*), and thus formerly was very difficult to procure genuine; on account of the increased cultivation of the plant, it is now, however, easily procured pure. Some samples are greenish-colored, others nearly white, but we prefer that of a brownish tint.

When dissolved in rectified spirit, in the proportion of about four ounces to the gallon, it forms the *Extract of Rose-Leaf Geranium* of the shops.—A word or two is necessary about the oil of geranium, as much confusion is created respecting it, in consequence of there being an oil under the name of geranium, but which in reality is derived from one of the *Andropogons*, cultivated in the Moluccas. This said andropogon (geranium!) oil can be used to adulterate the true geranium, and hence we suppose its nomenclature in the drug markets. The genuine rose-leaf geranium otto fetches about 6*s.* per ounce, while the andropogon oil is not worth more than that sum per pound. And we may observe here, that the perfuming essential oils are best purchased through the wholesale perfumers, as from the nature of their trade they have a better knowledge and means of obtaining the real article than the drug-broker. On account of the pleasing odor of the true oil of rose-leaf geranium, it is a valuable article for perfuming many materials, and appears to give the public great satisfaction. Recently some fine samples of otto of geranium have been brought to England, being the produce of Spain, very nearly as good as the otto imported from Grasse. It was sold at 3*s.* 6*d.* per ounce.

HEDIOSMIA.—A scent supposed to be derived from the *Hedyosmum*, an indigenous shrub of Jamaica.

HELIOTROPE.—Either by maceration or enfleurage with clarified fat, we may obtain this fine odor from the flowers of the *Heliotropium peruvianum* or *H. grandiflorum.* Exquisite as the odor of this plant is, at present it is not applied to use by the manufacturing perfumer. This we think rather a singular fact, especially as the perfume is powerful, and the flowers abundant. We should like to hear of some experiments being tried with this plant for procuring its odor in this country, and for that purpose now suggest the mode of operation which would most likely lead to successful results. For a small trial in the first instance, which can be managed by any person having the run of a garden, we will say, procure an ordinary glue-pot now in common use, which melts the material by the boiling of water; it is in fact a water-bath, in chemical parlance—one capable of holding a pound or more of melted fat. At the season when the flowers are in bloom, obtain a pound of fine lard, melt the lard and strain it through a close hair-sieve, allow the liquefied fat, as it falls from the sieve, to drop into cold spring water; this operation granulates and washes the blood and membrane from it. In order to start with a perfectly inodorous grease, the melting and granulation process may be repeated three or four times, using a pinch of salt and a pinch of alum in each water; it is then to be washed five or six times in plain water; finally, remelt the fat; and cast it into a pan to free it from adhering water.

Now put the clarified lard into the macerating pot, and place it in such a position near the fire of the greenhouse, or elsewhere, that will keep it warm enough to be liquid; into the fat throw as many flowers as you can, and there let them remain for twenty-four hours; at this time strain the fat from the spent flowers and add fresh ones; repeat this operation for a week: we expect at the last straining the fat will have become very highly perfumed, and when cold, may be justly termed *Pommade à la Héliotrope.*

The cold pomade being chopped up, like suet for a pudding, is now to be put into a wide-mouthed bottle, and covered with spirits as highly rectified as can be obtained, and left to digest for a week or more; the spirit then strained off will be highly perfumed; in reality it will be *extract of heliotrope*, a delightful perfume for the handkerchief. The rationale of the operation is simple enough; the fat body has a strong affinity or attraction for the odorous body, or essential oil of the flowers, and it therefore absorbs it by contact, and becomes itself perfumed. In the second operation, the spirit has a much greater attraction for the fragrant principle than the fatty matter; the former, therefore, becomes perfumed at the expense of the latter. The same experiment may be repeated with almond oil substituted for the fat, or the process of enfleurage may be adopted.

The experiment here hinted at may be varied with any flowers that there are to spare; indeed, by having the macerating bath larger than was mentioned above, an excellent *millefleur* pomade and essence might be produced from every conservatory in the kingdom, and thus we may receive another enjoyment from the cultivation of flowers beyond their beauty of form and color.

We hope that those of our readers who feel inclined to try experiments of this nature will not be deterred by saying, "They are not worth the trouble." It must be remembered, that very fine essences realize in the London perfumery warehouses 16*s.* per pint of 20 ounces, and that fine *flower-scented* pomades fetch the same sum per pound. If the experiments are successful, they should be published, as then we may hope to establish a new and important manufacture in this country, or our warm colonies. But we are digressing.

The odor of heliotrope resembles a mixture of almonds and vanilla, and is well imitated thus:

Extract of Heliotrope.

Spirituous extract of vanilla, ...	½ pint.
" " French rose pomatum, .	¼ pint.
" " orange-flower pomatum,	2 oz.
" " ambergris, . . .	1 oz.
Essential oil of almonds, ...	5 drops.

A preparation made in this manner under the name of *Extrait de Héliotrope* is that which is sold in the shops of Paris and London, and is really a very nice perfume, passing well with the public for a genuine extract of heliotrope.

HONEYSUCKLE OR WOODBINE.

> "Copious of flower the woodbine, pale and wan,
> But well compensating her sickly looks
> With never-cloying odors."

What the poet Cowper here says is quite true; nevertheless, it is a flower that is not used in practical perfumery, though there is no reason for abandoning it. The experiments suggested for obtaining the odor of Heliotrope and Millefleur (thousand flowers) are also applicable to this, as also to Hawthorn. A good

IMITATION OF HONEYSUCKLE

is made thus:

Spirituous extract of rose pomatum,	1 pint.
" " violet,	1 pint.
" " tubereuse,	1 pint.
Extract of vanilla,	¼ pint.
" tolu,	¼ pint.
Otto neroli,	10 drops.
" almonds,	5 drops.

The prime cost of a perfume made in this manner would probably be too high to meet the demand of a retail druggist; in such cases it may be diluted with rectified spirit to the extent "to make it pay," and will yet be a nice perfume. The formula generally given herein for odors is in anticipation that when bottled they will retail for at least eighteen-pence the fluid ounce! which is the average price put on the finest perfumery by the manufacturers.

HOVENIA.—A perfume under this name is sold to a limited extent, but if it did not smell better than the plant *Hovenia dulcis* or *H. inæqualis*, a native of Japan, it would not sell at all. The article in the market is made thus:

IMITATION ESSENCE OF HOVENIA.

Rectified spirit,	1 quart.
Rose-water,	½ pint.
Otto lemons,	½ oz.
" rose,	1 drachm.
" cloves,	½ drachm.
" neroli,	10 drops.

First dissolve the ottos in the spirit, then add the rose-water. After filtration it is ready for sale. When compounds of this kind do not become bright by passing through blotting-paper, the addition of a little carbonate of magnesia prior to filtering, effectually clears them. The water in the above recipe is only added in order that the article produced may be retailed at a moderate price, and would, of course, be better without that "universal friend."

JASMINE.

> "Luxuriant above all,
> The jasmine throwing wide her elegant sweets."

This flower is one of the most prized by the perfumer. Its odor is delicate and sweet, and so peculiar that it is without comparison, and as such cannot be imitated. When the flowers of the *Jasminum odoratissimum* are distilled, repeatedly using the water of distillation over fresh flowers, the essential oil of jasmine may be procured. It is, however, exceedingly rare, on account of the enormous cost of production.

There was a fine sample of six ounces exhibited in the Tunisian department of the Crystal Palace, the price of which was 9*l.* the fluid ounce! The plant is the Yasmyn of the Arabs, from which our name is derived.

The cultivation of the jasmine is very extensive at Cannes (du Département du Var) in the south of France. The manufacturing perfumers there do not grow all the jasmine they consume, but are supplied with small lots of flowers, from various cottagers, who have little plots of the plants, every morning in the season. The cost of these flowers is from two to three francs the kilogramme, equal to about 1*s.* 6*d.* to 2*s.* 6*d.* the pound; in this way the principal houses receive daily from one to two hundredweight of blossoms! The cultivated jasmine differs from that jasmine we have in England, inasmuch as the blossoms are four times the size of the British or wild jasmine; the plant also grows more like a small bush, and, not being a creeper, requires no supports; it is, in fact, the *Jasmin Grandiflora* of the botanists. Its growth and cultivation resemble very much that of English lavender.

Alphonse Karr has thus described a sale of some jessamines at Nice:

> The other day I saw two cultivators in a garden; one was buying of the other four thousand Spanish jessamine roots. I was not present at the struggle, but it must have been hot and passionate. When I arrived, the sale of the jessamines was concluded. The ordinary price of the Spanish jessamine is from three to five francs the hundred roots. These jessamines were splendidly loaded with large white flowers and pinkish violet buds. The buyer took a pickaxe and uprooted them. I thought he was mad. For jessamines torn up in full flowering in the month of August, would in

France be considered entirely lost, and fit only to be tied up in bundles for firewood. But this man, instead, carried his jessamines home, planted them in the ground, threw a few buckets of water over them, and left them to themselves. Three days afterwards I went to see them; they were in splendid condition, and had not ceased flowering.

In the perfumer's laboratory, the method of obtaining the odor is by absorption, or, as the French term it, *enfleurage;* that is, by spreading a mixture of pure lard and beef suet on a glass tray (*châssis en verre*), and sprinkling the fresh-gathered flowers all over it, leaving them to stand a day or so, and repeating the operation with fresh flowers during the whole time the jasmine plant is in blossom, which is for more than six weeks; the grease absorbs the odor. Finally, the pomade is scraped off the glass, melted at as low a temperature as possible, and strained. It requires at least three kilogrammes of flowers to perfume one kilogramme of grease.

Oils strongly impregnated with the fragrance are also prepared much in the same way. Cotton cloths (*molleton de coton*), previously steeped in olive oil, are covered with jasmine flowers, which is repeated several times; finally, the cotton cloths are squeezed under a press. The jasmine oil thus produced is the *Huile antique au jasmin* of the French houses. (See ENFLEURAGE, page 71.)

The Extract of Jasmine is prepared by pouring rectified spirit on the jasmine pomade or oil, and allowing them to remain together for a fortnight, at a summer heat. The best quality extract requires two pounds of pomatum to every quart of spirit. The same can be done with the oil of jasmine. If the pomade is used, it must be cut up fine previously to being put into the spirit; if the oil is used, it must be shaken well together every two or more hours, otherwise, on account of its specific gravity, the oil separates, and but little surface is exposed to the spirit. After the extract is strained off, the "washed" pomatum or oil is still useful, if remelted, in the composition of pomatum for the hair, and gives more satisfaction to a customer than any of the "creams and balms," &c., &c., made up and scented with essential oils; the one smells of the flower, the other Barberous.

The extract of jasmine enters into the composition of a great many of the most approved handkerchief perfumes sold by the English and French perfumers. The extract of jasmine made in England is much finer than the French, on account of the inodorous quality of the British spirit. Extract of jasmine is sold for the handkerchief often pure, but is one of those scents which, though very gratifying at first, becomes what people call "sickly" after exposure to the oxidizing influence of the air, but if judiciously mixed with other perfumes of an opposite character is sure to please the most fastidious customer.

Jonquil.—The scent of the jonquil is very beautiful; for perfumery purposes it is, however, but little cultivated in comparison with jasmine and tubereuse. It is prepared exactly as jasmine. The Parisian perfumers sell a mixture which they call "extract of jonquil." The plant, however, only plays the part of a godfather to the offspring, giving it its name. The so-called jonquil is made thus:

IMITATION EXTRACT OF JONQUIL.

Spirituous extract of jasmine pomade,	1 pint.
" " tubereuse,	1 pint.
" " fleur d'orange,	½ pint.
Extract of vanilla,	2 fluid oz.

TRUE EXTRACT OF JONQUIL.

Jonquil pomade,	8 lbs.
Spirit (60 over proof),	1 gallon.

Let it stand one month.

LAUREL.—By distillation from the leaves of the *Prunus Laurocerasus*, or Cherry laurel, an oil and perfumed water are procurable, of a very beautiful and fragrant character. Commercially, however, it is disregarded; as from the similarity of odor to the oil distilled from the bitter almond, it is rarely, if ever, used by the perfumer, the latter being more economical.

LAVENDER.

> "In each bright drop there is a spell.
> 'Tis from the soil we love so well,
> From English gardens won."

The climate of England appears to be better adapted for the perfect development of this fine old favorite perfume than any other on the globe. "The ancients," says Burnett, "employed the flowers and the leaves to aromatize their baths, and to give a sweet scent to water in which they washed; hence the generic name of the plant, *Lavandula*."

Lavender is grown to an enormous extent at Mitcham, in Surrey, and at Hitchin, in Herts, by Mr. Perks, which are the places of its production in a commercial point of view. Very large quantities are also grown in France. What is called the Alpine lavender of France is remarkably good; but the fine odor of the British produce realizes in the market four times the price of that of continental growth. Burnett says that the oil of *Lavandula Spica* is more pleasant than that derived from the other species; but this statement must not mislead the purchaser to buy the French spike lavender, as it is not worth a tenth of that derived from the *Lavandula vera.* Half a hundredweight of good lavender flowers yields, by distillation, from fourteen to sixteen ounces of essential oil.

Lavandula vera is a native of Persia, the Canaries, Barbary, and the south of Europe, from the last of which it is said to have been first brought to England, where, finding a congenial soil, and being carefully cultivated, it yields an essential oil, or *otto*, very far superior to that produced from it in its original places of growth. The peculiar qualities of most plants are susceptible of change, and in many instances of improvement, by cultivation, but none, perhaps, more so than this. It is not ever in all parts of this country that it can be grown with success, and for many years it was supposed that it would only come to perfection in the neighborhood of Mitcham, in Surrey; but it has, within the last half century, been found that a soil and climate still more suited to its growth exists near Hitchin, in Hertfordshire. There the finest otto is now produced from its flowers, by Mr. S. Perks, from whom we have received the following account of the mode of its cultivation and treatment:

The ground for a plantation of lavender should not be surrounded by high hedges, or in the immediate neighborhood of any trees, which tend to retain too much moisture upon the plants, and thus cause the spring frost to cut off the flowers, but should be as much exposed to the sun as possible.

In October, a large number of slips from the old plants are placed in previously prepared beds, where they are allowed to remain for twelve months, during which time they are carefully clipped. When a year old, they are planted out (in fine weather) in rows four feet apart, with a space of three feet from plant to plant, but are not allowed to flower, the clipping being still continued, in order to strengthen them, which object is further promoted by a regular supply of short manure to the roots. If this cannot be procured in sufficient quantity, its place may be supplied by superphosphate of lime, which greatly improves the appearance of the plant, and causes it also to produce finer flowers.

The usual mode of procuring the otto is to put the flowers and stalks into a still with sufficient water, and thus draw off the oil; but I have found by experiment that very little is produced from the stalks, and that little of inferior quality. My present practice is therefore to employ only the flowers, which are stripped from the stalks previously to the distillation; and though this is necessarily a more expensive way of proceeding, the superior quality of the product enhances its value in an equal degree, whilst the loss in quantity is very small. The aroma of the otto produced by this process is so far superior to that of any other, as to be at once perceptible to every one accustomed to the use of an inferior kind, and even to those who may be said to have an entirely uneducated sense of smelling. It is, in fact, a pure otto, and when suitably combined with other appropriate materials, produces "Lavender Water" of the most exquisite fragrance that has hitherto been made.

The number of lavender plants upon an acre of ground would be about 3547, that is, if planted one yard apart and four feet between the rows. An acre would yield about six to seven quarts of oil, but it depends upon the age of the plants; the latter, when about four years old, produce most.

All the inferior descriptions of oil of lavender are used for perfuming soaps and greases; but the best, that obtained from the Mitcham and Hitchin lavender, is entirely used in the manufacture of what is called lavender water, but which, more properly, should be called essence or extract of lavender, to be in keeping with the nomenclature of other essences prepared with spirit.

The number of formulæ published for making a liquid perfume of lavender is almost endless; but the whole of them may be resolved into, essence of lavender, simple; essence of lavender, compound; and lavender water.

There are two methods of making essence of lavender: 1. By distilling a mixture of essential oil of lavender and rectified spirit; and the other—2. By merely mixing the oil and the spirit together.

The first process yields the finest quality; it is that which is adopted by the firm of Smyth & Nephew, whose reputation for this article is such that it gives a good character in foreign markets, especially India, to all products of lavender of English manufacture. Lavender essence, that which is made by the still, is quite white, while that by mixture only always has a yellowish tint, which, by age, becomes darker and resinous.

Smyth's Lavender.

To produce a very fine distillate, take—

Otto of English lavender, ...	4 oz.
Rectified spirit (60 over proof), . . .	5 pints.
Rose-water, ...	1 pint.

Mix and distil five pints for sale. Such essence of lavender is expensive, but at 10*s.* a pint of 14 oz.! there *is* a margin for profit. If not being convenient to the general dealer to sell distilled lavender essence, the following form, by mixture, will produce a first-rate article, and nearly as white as the above:

ESSENCE OF LAVENDER.

Otto of lavender,	6 oz.
Rectified spirit,	1 gallon.

The perfumer's retail price for such quality is 10*s.* per imperial pint of 20 oz.

Many perfumers and druggists, in making lavender water or essence, use a small portion of bergamot, with an idea of improving its quality,—a very erroneous opinion; moreover, such lavender quickly discolors.

LAVENDER WATER.

Take—

English oil of lavender,	4 oz.
Spirit,	3 quarts.
Rose-water,	1 pint.

Filter, and it is ready for sale.

COMMON LAVENDER WATER.

Same form as the above, substituting French lavender for the British.

DETECTION OF SPIKE OIL AND TURPENTINE IN OTTO OF LAVENDER.

BY DR. J. GASTELL.

There are two kinds of lavender oil known in commerce; one, which is very dear, and is obtained from the flowers of the *Lavandula vera;* the other is much cheaper, and is prepared from the flowers of the *Lavandula Spica.* The latter is generally termed oil of spike. In the south of France, whether the oil be distilled from the flowers of the *Lavandula vera* or *Lavandula Spica,* it is named oil of lavender.

By the distillation of the whole plant, or only the stalk and the leaves, a small quantity of oil is obtained, which is rich in camphor, and is then called oil of spike. Pure oil of lavender should have a specific gravity from .876 to .880, and be completely soluble in five parts of alcohol of a specific gravity of .894. A greater specific gravity shows that it is mixed with oil of spike; and a less solubility, that it contains oil of turpentine.

Recipes for Rondoletia, Lavender Bouquet, and other lavender compounds, will be given when we come to speak of compound perfumes, which will be reserved until we have finished explaining the method of making the simple essences.

LEMON.—This fine perfume is abstracted from the *Citrus Limonum*, by expression, and also by distillation from the rind of the fruit. That which is procured by expression, has a much finer odor and a more intense lemony smell than the distilled product. As a distinction the expressed lemon is called CITRON ZEST, and the distilled quality is known as Ess. Lemon. The otto of lemons in the market is principally from Messina, where there are hundreds of acres of "lemon groves." Otto of lemons, like all the ottos of the Citrus family, is rapidly prone to oxidation when in contact with air and exposure to light; a high temperature is also detrimental, and as such is the case, it should be preserved in a cool cellar. Most of the samples from the gas-heated shelves of the druggists' shops are as much like essence of turpentine, to the smell, as that of lemons; rancid oil of lemons may, in a great measure, be purified by agitation with warm water and final decantation. The following remarks, made by Mr. Cobb, of Yarmouth, are useful:

Being constantly annoyed by the deposit and alteration in my essence of lemons, I have tried various methods of remedying the inconvenience.

I first tried redistilling it, but besides the loss consequent on distilling small quantities, the flavor is thereby impaired. As the oil became brighter when heated, I anticipated that all its precipitable matter would be thrown down at a low temperature, and I applied a freezing mixture, keeping the oil at zero for some hours. No such change, however, took place.

The plan which I ultimately decided upon as the best which I had arrived at, was to shake up the oil with a little hot water, and to leave the water in the bottle; a mucilaginous preparation forms on the top of the water, and acquires a certain tenacity, so that the oil may be poured off to nearly the last, without disturbing the deposit. Perhaps cold water would answer equally well, were it carefully agitated with the oil and allowed some time to settle. A consideration of its origin and constitution, indeed, strengthens this opinion; for although lemon otto is obtained both by distillation and expression, that which is usually found in commerce is prepared by removing the "flavedo" of lemons with a rasp, and afterwards expressing it in a hair sack, allowing the filtrate to stand, that it may deposit some of its impurities, decanting and filtering. Thus obtained, it still contains a certain amount of mucilaginous matter, which undergoes spontaneous decomposition, and thus (acting, in short, as a ferment) accelerates a similar change in the oil itself. If this view of its decomposition be a correct one, we evidently, in removing this matter by means of the water, get rid of a great source of alteration, and attain the same result as we should by distillation, without its waste or deterioration in flavor.

I am, however, aware that some consider the deposit to be modified resin. Some curious experiments of Saussure have shown that volatile oils absorb oxygen immediately they have been drawn from the plant, and are partially converted into a resin, which remains dissolved in the remainder of the essence.

He remarked that this property of absorbing oxygen gradually increases until a maximum is attained, and again diminishes after a certain lapse of time. In the oil of lavender this maximum remained only seven days, during each of which it absorbed seven times its volume of oxygen. In the oil of lemons the maximum was not attained until at the end of a month; it then lasted twenty-six days, during each of which it absorbed twice its volume of oxygen. It is the resin formed by the absorption of oxygen, and remaining dissolved in the essence, which destroys its original odor. In conclusion, I would recommend that this oil, as well as all other essential oils, be kept in a cool, dark place, where no very great changes of temperature occur.

When new and good, lemon otto may be freely used in combination with rosemary, cloves, and caraway, for perfuming powders for the nursery. From its rapid oxidation, it should not be used for perfuming grease, as it assists rather than otherwise all fats to turn rancid; hence pomatums so perfumed will not keep well. In the manufacture of other compound perfumes, it should be dissolved in spirit, in the proportion of six to eight ounces of oil to one gallon of spirit. There is a large consumption of otto of lemons in the manufacture of eau de Cologne; that Farina uses it, is easily discovered by adding a few drops of Liq. Ammoniæ fort. to half an ounce of his eau de Cologne,—the smell of the lemon is thereby brought out in a remarkable manner.

Perhaps it is not out of place here to remark, that in attempts to discover the composition of certain perfumes, we are greatly assisted by the use of strong Liq. Ammoniæ. Certain of the essential oils combining with the Ammonia, allow those which do not do so, if present in the compound, to be smelt.

LEMON GRASS.—According to Thwaites, the otto in the market under this name is derived from the *Andropogon Nardus*, a species of grass which grows abundantly in India. It is cultivated to a large extent in Ceylon and in the Moluccas purposely for the otto, which is easily procured from the plant by distillation. Lemon grass otto, or, as it is sometimes called, oil of verbena, on account of its similarity of odor to that favorite plant, is imported into this country in old English porter and stout bottles. It is very powerful, well adapted for perfuming soaps and greases, but its principal consumption is in the manufacture of artificial essence of verbena. From its comparatively low price, great strength, and fine perfume (when diluted), the lemon grass otto may be much more used than at present with considerable advantage to the retail shopkeeper.

The annual production of lemon grass otto in Ceylon is nearly 1500 lbs., and it is valued there at 1*s.* 4*d.* per ounce. Specimens of the plant which produces it are to be seen at the Royal Gardens, Kew.

LEMON-SCENTED GUM TREE, *Eucalyptus Citriodora.*—The leaves of this species of *Eucalyptus*, on being bruised, yield a delightful citron-like odor, compared by some to the smell of balm, and by others to that of Citronella, and when the leaves are dried and placed among clothes or papers they impart an agreeable scent to them. Considering that it might prove useful in an economical point of view, Dr. Bennett, author of "Gatherings of a Naturalist in Australia," procured a quantity of the leaves, which were distilled by Mr. Norie, a practical chemist in Sydney, and it was found that three pounds twelve ounces of leaves yielded by distillation, six drachms and a half of a pure, colorless otto; a specimen of which Dr. Bennett has placed in the Museum at Kew.

LILAC.—The fragrance of the flowers of this ornamental shrub is well known. The essence of lilac is obtained either by the process of maceration, or enfleurage with grease, and afterwards treating the pomatum thus formed with rectified spirit, in the same manner as previously described for cassie; the odor so much resembles tubereuse, as to be frequently used to adulterate the latter, the demand for tubereuse being at all times greater than the supply. A beautiful

Imitation of Essence of White Lilac

may be compounded thus:

Spirituous extract from tubereuse pomade, .	1 pint.
" " of orange flower pomade, .	¼ pint.
Otto of almonds, ...	3 drops.
Extract of civet, ...	½ oz.

The civet is only used to give permanence to the perfume of the handkerchief.

Lily.—The manufacturing perfumer rejects the advice of the inspired writer, to "consider the lilies of the field." Rich as they are in odor, they are not cultivated for their perfume. If lilies are thrown into oil of sweet almonds, or olive oil, they impart to it their sweet smell; but to obtain anything like fragrance, the infusion must be repeated a dozen times with the same oil, using fresh flowers for each infusion, after standing a day or so. The oil being shaken with an equal quantity of spirit for a week, gives up its odor to the alcohol, and thus extract of lilies *may* be made. But how it *is* made is thus:

IMITATION LILY OF THE VALLEY.

Extract of tubereuse,	½ pint.
" jasmine,	1 oz.
" fleur d'orange,	2 oz.
" vanilla,	3 oz.
" cassie,	¼ pint.
" rose,	¼ pint.
Otto of almonds,	3 drops.

Keep this mixture together for a month, and then bottle it for sale. It is a perfume that is very much admired.

MACE.—This substance is procured from the nutmeg-tree: thus, the nutmegs are inclosed in four different covers; the first is a thick husk, something like that of our walnuts, but larger; under this lies a thin reddish coat, which is the mace of commerce; the mace wraps up the shell and opens like a network, as the fruit, or rather seed grows; the shell is hard and thin and destitute of odor; under this is a greenish film, of no use in trade, but which is, in truth, the shirt of the seed or nutmeg. The odor of mace only resembles that of nutmeg in being spicy; it cannot, however, be mistaken for the smell of nutmeg. The otto of mace, like that of nutmeg, is readily procured by distillation. The nutmeg-tree, like that of orange, gives distinct fragrances in different parts of it. Thus we have otto of mace and otto of nutmeg produced by the same plant within a quarter of an inch of each other. What wonderful valves and taps to keep them from mixing! Ground mace is used in the manufacture of some of those scented powders called Sachets. The strong-smelling essential oil is useful for scenting soap.

MAGNOLIA.—The perfume of this flower is superb; practically, however, it is of little use to the manufacturer; the large size of the blossoms and their comparative scarcity prevents their being used; but a very excellent imitation of their odor is made as under, and is that which is found in the perfumers' shops of London and Paris.

IMITATION ESSENCE OF MAGNOLIA.

Spirituous extract of orange-flower pomatum,	1 pint.
" " rose pomatum, . .	2 pints.
" " tubereuse pomatum, .	½ pint.
" " violet pomatum, . .	½ pint.
Otto of citron zest, ...	3 drs.
" almonds, ...	10 drops.

MARJORAM.—The otto procured by distilling *Origeat majorana*, commonly called oil of origeat by the French, is exceedingly powerful, and in this respect resembles all the ottos from the different species of thyme, of which the marjoram is one. One hundredweight of the dry herb yields about ten ounces of the otto. Origeat oil is extensively used for perfuming soap, but more in France than in England. It is the chief ingredient used by Gelle Frères, of Paris, for scenting their "Tablet Monstre Soap," so common in the London shops.

MEADOW-SWEET, known also as MEADOW-QUEEN.—A sweet-smelling otto can be produced by distilling the *Spiræa Ulmaria*, but it is not used by perfumers; it is, however, interesting as being one of those organic substances which can be made in the chemical laboratory.

MECCA BALM.—See BALSAM.

MELISSA.—See BALM.

MIGNONETTE, otherwise REZEDA.—But for the exquisite odor of this little flower, it would scarcely be known otherwise than as a weed. Sweet as it is in its natural state, and prolific in odor, we are not able to maintain its characteristic smell as an essence. Like many others, during separation from the plant, the fragrance is more or less modified; though not perfect, it still reminds the sense of the odor of the flowers. To give it that sweetness which it appears to want, a certain quantity of violet is added to bring it up to the market odor.

As this plant is so very prolific in odor, we think something might be done with it in England, especially as it flourishes as well in this country as in France. We desire to see Flower Farms and organized Perfumatories established in the British Isles, for the extraction of essences and the manufacture of pomade and oils, of such flowers as are indigenous, or that thrive in the open fields of our country. Besides opening up a new field of enterprise and good investment for capital, it would give healthy employment to many women and children. Open air employment for the young is of no little consideration to maintain the stamina of the future generation; for it cannot be denied that our factory system and confined cities are prejudicial to the physical condition of the human family.

To return from our digression. The essence of mignonette, or, as it is more often sold under the name of Extrait de Rézéda, is prepared by infusing the rézéda pomade in rectified spirit, in the proportion of one pound of pomade to one pint of spirit, allowing them to digest together for a fortnight, when the essence is filtered off the pomade. One ounce of extract of tolu is added to every pint. This is done to give permanence to the odor upon the handkerchief, and does not in any way alter its smell. M. March, of Nice, is the principal maker of Rézéda pomade; to use his own words, he has a *spécialité* for its fabrication. It is made by the enfleurage process.

MIRIBANE.—The French name for artificial essence of almond. (See ALMOND.)

MINT.—All the *Menthidæ* yield fragrant ottos by distillation. The otto of the spear-mint (*M. viridis*) is exceedingly powerful, and very valuable for perfuming soap, in conjunction with other perfumes. Perfumers use the ottos of the mint in the manufacture of mouth washes and dental liquids. The leading ingredient in the celebrated "eau botot" is oil of peppermint in alcohol. Mint ottos have more power than any other aromatic to overcome the smell of tobacco. Mouth washes, it must be remembered, are as much used for rinsing the mouth after smoking as for a dentifrice.

MUSK-SEED.—This odorous substance, known in the perfumery trade as *Grains d'Ambrette*, is produced by the plant *Hibiscus Abelmoschus*. *Kabb-el-Misk* is the Arabic name, of which, says Burnett, Abelmoschus is a vile corruption. Several other allied species are remarkable for a similar odor, of which one, SUMBUL, has been recently brought into notice by Mr. John Savory. Very little is known in England of Chinese toilet practices; but we are told, on good authority, that from one of these species, the *Hibiscus Rosa sinensis*, "the Chinese make a black dye for their hair and eyebrows, and a blacking for their shoes!"

Musk-seed, when ground, certainly reminds our smelling sense of the odor of musk, but it is poor stuff at best: however, for making cheap sachet powder, it may be used for variety's sake. When hair-powder was in fashion, perfumers used to scent the starch of which the powder was made, by mixing the ground ambrette with the fecula; after lying together for a few hours the starch was then sifted away, and packed for sale.

MYRTLE.

The laurel and the myrtle sweets agree,
And both in nosegays shall be bound for thee.
HORACE.

A very fragrant otto may be procured by distilling the leaves of the common myrtle; one hundredweight will yield about five ounces of the volatile oil. The demand for essence of myrtle being very limited, the odor as found in the perfumers' shops is very rarely a genuine article, but is imitated thus:

IMITATION ESSENCE OF MYRTLE.

Extract of	vanilla,	½ pint.
"	roses,	1 pint.
"	fleur d'orange,	½ pint.
"	tubereuse,	½ pint.
"	jasmine,	2 oz.

Mix, and allow to stand for a fortnight: it is then fit for bottling, and is a perfume that gives a great deal of satisfaction.

Myrtle-flower water is sold in France under the name of eau d'ange, and may be prepared like rose, elder, or other flower waters.

MYRRH.—This odorous gum or resin has been known from time immemorial, as is evident from its frequent mention in the Bible. Its fragrance is due to a peculiar otto or essential oil. One hundred pounds yield by distillation about eight ounces of the otto, which has all the characteristics of myrrh in a high degree. Considering such a substance to possess interest, I have placed a sample of the otto of myrrh in the Museum at Kew.

Major Harris describes the myrrh tree (*Balsamodendron Myrrha*) as growing abundantly on the Abyssinian coast of the Red Sea to the Straits of Bab-el-Mandeb, over all the barren hillsides of the low zone inhabited by the Danakil or Adaril tribes. It is called Kurbeta, and there exist two varieties; one (producing the better description of the gum) being a dwarf shrub with deeply serrated crisp leaves of a dull green, while the other, which yields a substance more like balm than myrrh, attains a height of ten feet, and has bright shining slightly dentated leaves. The myrrh, called Hofali, flows freely from any wound, in the form of a milky juice, possessing a perceptible acridity, which either evaporates or becomes chemically changed during the formation of the gum. The seasons for collecting it are in January, when the buds appear after the first rain, and in March, when the seeds are ripe.

Every passer-by transfers such portions of it as he may find to the hollow boss of his shield, and exchanges it for a handful of tobacco with the next slave-dealer whom he meets on the caravan route. The merchants also of the sea-coast, before returning from Abyssinia, send into the forests that gird the western bank of the river Hawash, and bring away considerable quantities of the *Hofali*, which is sold at a high price.

The natives administer it to their horses, in cases of fatigue and exhaustion.*

Gum myrrh is used extensively by perfumers, in the manufacture of dentifrices, in pastils, and fumigating spirits.

NARCISSUS.—This plant is cultivated to a small extent at Nice, and its odor is procured by enfleurage and maceration. The smell of it to many is exceedingly grateful, but in close apartments the exhalations of the plant are said to be noxious; indeed, its narcotic odor was known to the ancients, and hence its name is said to be derived from *ναρχή*, stupor. The following is a good form, imitating the odor of narcissus when the true extract cannot be obtained:

EXTRACT OF NARCISSUS.

Extract of tuberose, ...	3 pints.
" jonquil, ...	2 pints.
" storax, ...	¼ pint.
" tolu, ...	¼ pint.

NEROLI, OR ORANGE-FLOWER.—Two distinct odors are procurable from the orange-blossom, varying according to the methods adopted for procuring them. This difference of perfume from the same flower is a great advantage to the perfumery factor, and it is a curious fact worthy of inquiry by the chemical philosopher. This duality of fragrance is not peculiar to the orange-flower, but applies to many others, especially rose—probably to all flowers.

When orange-flowers are treated by the maceration process,—that is, by infusion in a fatty body,—we procure orange-flower pomatum, its strength and quality being regulated by the number of infusions of the flower made in the same grease. The value of orange-flowers is from 75*c.* to 1*f.* 25*c.* per kilogramme, and it requires eight kilogrammes of blossoms to enflower one kilogramme of grease, divided over thirty-two infusions—that is, a quarter kilogramme of flowers to every kilogramme of fat for each maceration.

---

* Trans. Linn. Soc.

By digesting this orange-flower pomatum in rectified spirits, in the proportions of from six pounds to eight pounds of pomade to a gallon of spirit, for about a month at a summer heat, we obtain the Extrait de Fleur d'Orange, or extract of orange-flowers, a handkerchief perfume surpassed by none. In this state its odor resembles the original so much, that with

Orange.

closed eyes the best judge could not distinguish the scent of the extract from that of the flower. The peculiar flowery odor of this extract renders it valuable to the perfumers, not only to sell in a pure state, but slightly modified with other *extraits*, passes for "sweet pea," "magnolia," &c., which it slightly resembles in fragrance.

Now, when orange-flowers are distilled with water, we procure the otto of the blossom, which is known commercially as oil of neroli. The neroli procured from the flowers of the *Citrus Aurantium* is considered to be the finest quality, and is called "neroli petale." The next quality, "neroli bigarade," is derived from the blossoms of the *Citrus Bigaradia*, or Seville orange. Another quality, which is considered inferior to the preceding, is the "neroli petit grain," obtained by distilling the leaves and the young unripe fruit of the different species of the citrus. If a leaf of the orange-tree be held up between the observer and the sun, he will perceive small globular specks in the leaf, which are in truth the sacs of otto; from this fact the term petit grain, small grains, is derived.

The "petale" and "bigarade" neroli are used to an enormous extent in the manufacture of Hungary water and eau de Cologne and other handkerchief perfumes. The "petit grain" is mainly consumed for scenting soap. To form the

ESPRIT NEROLI.

Neroli petale, ...	2 oz.
Rectified spirit, ...	1 gallon.

Although very agreeable, and extensively used in the manufacture of bouquets, it has no relation to the flowery odor of the extrait de fleur d'orange, as derived from the same flowers by maceration; in fact, it has as different an odor as though obtained from another plant, yet in theory both these *extraits* are but alcoholic solutions of the otto of the flower.

The water used for distillation in procuring the neroli, when well freed from the oil, is imported into this country under the name of eau de fleur d'orange, and may be used, like elder-flower and rose-water, for the skin, and as an eye lotion. It is remarkable for its fine fragrance, and it is astonishing that it is not more used, being moderate in price. There are three sorts of orange-flower waters found in commerce. The first is distilled from the flowers; the second is made with distilled water and neroli; and the third is distilled from the leaves, the stems, and the young unripe fruit of the orange-tree. The first may be easily distinguished by the addition of a few drops of sulphuric acid to some of the water in a tube; a fine rose color is almost immediately produced. The second also gives the same color when it is freshly prepared; but after a certain time—two or three months at the farthest—this color is no longer produced, and the aroma disappears completely. The third is not discolored by the addition of the sulphuric acid; it has scarcely any odor, and that rather an odor of the lemon plant than of orange-flowers. Hitherto England has been dependent on Italy and the South of France for the various odors derived from the orange; but from the extensive cultivation of this plant at THE ORANGERY, near Sydney, by Richard Hill, Esq., J. P., we may soon expect in the markets of Britain the products of this plant from our antipodean colony.

As there are full a dozen or more well-known varieties of the orange, there may be procured a corresponding quantity of varieties of otto from them.

The origin of the term "neroli" applied to the otto of orange-blossom is not very definite. It may have been named after the celebrated Roman Emperor Nero, who was so fond of scents that he caused the roof of his dining halls to represent the firmament, and to shower down, night and day, all sorts of perfumes and sweet waters; or it may be that "neroli" was first procured by the Sabines, who, to distinguish it from other perfumes of the period, named it neroli, from "nero," which signifies "strong." The Sabines, it should be remembered, inhabit a province of Italy, Sabina, where the orange tree is very abundant. (See ORANGE, p. 131.)

• NUTMEG.—Few fragrant substances are of more commercial importance than the nutmeg. "Its history," says Burnett, "affords an instance of the extravagance to which the spirit of monopoly will urge and has carried not only private individuals but even states."

The principal nutmeg-gardens of the world are the Banda Islands, colonized by the Dutch about two hundred and fifty years ago. Soon after the subjugation of the original inhabitants, they endeavored to secure to themselves the entire trade in this odorous substance. For this purpose they encouraged the cultivation of the nutmeg-tree in only a few of the islands, and being over-anxious, for the sake of the monopoly, to have them there exclusively under their own command, they destroyed the trees in the neighboring isles.

It will be remembered that they pursued the same policy with respect to the clove plant. More than once they have, however, suffered dearly for their insatiable avarice; for the dreadful hurricanes and earthquakes, which swept harmlessly over the other islands, nearly annihilated the nutmeg-trees of Banda in 1778. While the Dutch held the Spice Islands, the quantity of nutmegs and mace exported from their nutmeg-grounds, circumscribed as they were, was truly enormous; the quantity sold in Europe has been estimated at 250,000 pounds, and in the East Indies at 125,000 pounds; of mace, the average has been 90,000 pounds sold in Europe, and 10,000 in India.

When the Spice Islands were taken by the British in 1796, the importation by the East India Company into England alone, in two years following the capture, were, of nutmegs, 129,723 pounds, and of mace 286,000 pounds. It is thus evident that Britannia does not "turn up her nose" at the odor of nutmeg and mace!

When the crops of spice have been superabundant, and the price, in consequence, likely to be reduced, the same ignorant spirit before mentioned has actuated the Dutch to destroy immense quantities of the fruit rather than suffer the market price to be lowered. When Sir William Temple was at Amsterdam, a merchant who had returned from Banda assured him that "at one time he saw three piles of nutmegs burnt, each of which was more than a church of ordinary dimensions could hold." Mr. Wilcocks, the translator of *Stavarinus's Travels*, relates that he beheld such a conflagration of cloves, nutmegs, and cinnamon, upon the island of Newland, near Middleburgh, in Zealand, as perfumed the air with their peculiar fragrance for many miles round. Balfour says, that "in 1814, when the Moluccas were in the possession of the English, the number of nutmeg trees planted out was estimated at 570,500, of which 480,000 were in bearing." The produce of nutmegs in the Moluccas has been reckoned at from 600,000 to 700,000 pounds per annum, of which half goes to Europe, and about one-fourth that quantity of mace. The annual consumption of nutmegs in Britain is said to be 140,000 pounds. The nutmeg-tree, like many others, yields two distinct odorous substances, that is, otto of mace (see MACE, page 118), and otto of nutmeg. The otto of nutmeg, of which we have here to speak, is a beautiful white and transparent fluid, having an intense fragrance of the nut, from which it is easily procured by distillation. It enters into the composition of numerous perfumery preparations, of which the Frangipani series are examples. As it is more powerful than cloves, it must be used sparingly; but, when used with judgment, combines happily with lavender, santal, bergamot, and others.

By expression, the nutmeg will also yield an unctuous fat oil of an agreeable odor; this combined with an alkali produces a pleasant soap. Forty years ago such soap was commonly sold by perfumers under the name of Bandana or Banda soap, but which is now quite out of date.

The pleasant odor of the nutmeg is familiar to all. The ground nuts are used advantageously in the combinations of scented powders used for scent-bags. (See SACHET-POWDER.)

OLIBANUM is a gum resin, used to a limited extent in this country, in the manufacture of incense and pastilles. It is chiefly interesting as being one of those odoriferous bodies of which frequent mention is made in the Holy Volume.

"It is believed," says Burnett, "to have been one of the ingredients in the sweet incense of the Jews: and it is still burnt as incense in the Greek and Romish churches, where the diffusion of such odors round the altar forms a part of the prescribed religious service." Mr. P. L. Simmonds says:

> The gum olibanum of commerce is the frankincense of the ancients and the luban of the Arabs. In India it is obtained from several species of *Boswellia*, *serrata*, *thurifera*, and *glabra*. No botanical description appears to have been published of the African tree, although Captain Kempthorne, Major Harris, and other travellers, furnished some general account of it. The tree invariably grows from the bare and smooth sides of the white marble rocks, or from isolated blocks of the same, scattered over the plain, without any soil whatever. On making a deep incision into the trunk, the resin exudes profusely, of the color and consistence of milk, but hardening into a mass by exposure to the air. The young trees produce the best and most valuable gum, the older merely yielding a clear glutinous fluid resembling copal, and exhaling a strong resinous odor.
>
> Olibanum was formerly in high repute as a sovereign remedy against inflammation of the eyes, and as an efficacious remedy in consumption. It was also commonly drank as a stimulant in wine. But for all these purposes it has long gone out of use, and is chiefly imported here for reshipment to the Continent, being bought up by the Greek merchants for the use of the Church.
>
> The trees that produce the luban or frankincense are of two kinds, viz., the luban meyeti and the luban bedowi. Of these the meyeti, which grows out of the naked rock, is the more valuable; and when clean picked and of good quality, it is sold by the mer-

chants on the coast for 1¼ dollar per frasila of 20 lbs. The luban bedowi of the best quality is sold for 1 dollar per frasila. Of both kinds the palest color is preferred. The trees vary greatly in height, but are never above twenty feet, with a stem of nine inches in diameter. Their form is very graceful, and when springing from a mass of marble on the brink of a precipice, their appearance is especially picturesque.

Although the Wursungili range and other mountainous tracts afford an inexhaustible supply of frankincense, it is a mistake to suppose that elevated districts produce the best gum.

Lieutenant Cruttenden, in his journey among the Edoor tribes, states that the gum of the large-leaf kind of frankincense tree is not much prized.

Olibanum is partially soluble in alcohol, and, like most of the balsams, probably owes its perfume to a peculiar odoriferous body, associated with the benzoic acid it contains.

For making the tincture or extract of olibanum, take 1 pound of the gum to 1 gallon of the spirit.

Orange.—During the past century, the odor of orange-flowers was so much in vogue, that the cultivation of Louis the Fourteenth's orange trees was a source of considerable expense, for the great king would have one of these favorite shrubs in each of his apartments.

Under the title "Neroli," we have already spoken of the odoriferous principle of the orange-blossom. We have now to speak of what is known in the market as essence of orange, or, as it is more frequently termed, essence of Portugal,—a name, however, which we cannot admit in a classified list of the "odors of plants."

The otto of orange-peel, or odoriferous principle of the orange fruit, is procured by expression and by distillation. The peel or flavedo is rasped, in order to crush the little vessels or sacs that imprison the otto.

Its abundance in the peel is shown by pinching a piece near the flame of a candle; the otto that spurts out ignites with a brilliant illumination.

It has many uses in perfumery, and from its refreshing fragrance finds numerous admirers.

It is the leading ingredient in what is sold as "Lisbon water," and "eau de Portugal." The following is a very useful form for preparing

Lisbon Water.

Rectified spirit (not less than 60 over proof),	1 gallon.
Otto of orange-peel,	4 oz.
" citron zeste,	2 oz.
" rose,	¼ oz.

This is a form for

Eau de Portugal.

Rectified spirit (60 over proof),	1 gallon.
Essential oil of orange-peel,	8 oz.
" of citron zeste,	2 oz.
" of bergamot,	1 oz.
" of otto of rose,	¼ oz.

Grape-spirit for this article produces the finest quality.

It should be noted that these perfumes are never to be put into wet bottles, for if in any way damp from water, a minute portion of the ottos is separated, which gives an opalescent appearance to the mixture. Indeed, all bottles should be *spirit-rinsed* prior to being filled with any perfume, but especially with those containing essences of orange or lemon peel. (See Neroli.)

Orris, properly Iris.—The dried rhizome of *Iris florentina* has a very pleasant odor, which, for the want of a better comparison, is said to resemble the smell of violets; it is, however, exceedingly derogatory to the charming aroma of that modest flower when such invidious comparisons are made. Nevertheless, the perfume of iris root is good, and well worthy of the place it has obtained as a perfuming substance. The powder of orris root is very extensively used in the manufacture of sachet powders, tooth-powder, &c. It fathers that celebrated "oriental herb," known as "odonto." For tincture of orris, or, as the perfumers call it,

EXTRACT OF ORRIS.

Take orris root, crushed, ...	7 lbs.
Rectified spirits, ...	1 gallon.

After standing together for about a month, the extract is fit to take off. It requires considerable time to drain away, and, to prevent loss, the remainder of the orris should be placed in the tincture press. This extract enters into the composition of many of the most celebrated bouquets, such as "Jockey Club," and others, but is never sold alone, because its odor, although grateful, is not sufficiently good to stand public opinion upon its own merits; but in combination its value is very great; possessing comparatively little aroma itself, it has the power of strengthening the odor of other fragrant bodies; like the flint and steel, which, though comparatively incombustible, readily fire inflammable bodies.

PALM (*Elæis guineensis*).—The odor of palm oil—the fat oil of commerce—is due to a fragrant principle which it contains. By infusion in alcohol, the odoriferous body is dissolved, and resembles, to a certain extent, the tincture of orris, or of extract of violet, but is very indifferent, and is not likely to be brought into use, though several attempts have been made to render it of service when the cultivation of the violets has failed from bad seasons.

PATCHOULY (*Pogostemon Patchouli*, *Lindley; Plectranthus crassifolius*, *Burnett*) is an herb that grows extensively in India and China. It somewhat resembles our garden sage in its growth and form, but the leaves are not so fleshy.

The odor of patchouly is due to an otto contained in the leaves and stems, and is readily procured by distillation. 1 cwt. of good herb will yield about 28 oz. of the essential oil, which is of a dark brown color, and of a density about the same as that of oil of otto of santal-wood, which it resembles in its physical character. Its odor is the most powerful of any

Patchouly.

derived from the botanic kingdom; hence, if mixed in the proportion of measure for measure, it completely covers the smell of all other bodies.

EXTRACT OF PATCHOULY.

Rectified spirit,	1 gallon.
Otto of patchouly,	1¼ oz.
" rose,	¼ oz.

The essence of patchouly thus made is that which is found in the perfumers' shops of Paris and London. Although few perfumes have such a fashionable run, yet when smelled at in its pure state, it is far from agreeable, having a kind of mossy or musty odor, analogous to Lycopodium, or, as some say, it smells of "old coats."

The characteristic smell of Chinese or Indian ink is due to some admixture of this herb and camphor.

The origin of the use of patchouly as a perfume in Europe is curious. A few years ago real Indian shawls bore an extravagant price, and purchasers could always distinguish them by their odor; in fact, they were perfumed with patchouly. The French manufacturers had for some time successfully imitated the Indian fabric, but could not impart the odor.

At length they discovered the secret, and began to import the plant to perfume articles of their make, and thus palm off homespun shawls as real Indian! From this origin the perfumers have brought it into use. Patchouly herb is extensively used for scenting drawers in which linen is kept; for this purpose it is best to powder the leaves and put them into muslin sacks, covered with silk, after the manner of the old-fashioned lavender bag. In this state it is very efficacious in preventing the clothes from being attacked by moths. Several combinations of patchouly will be given in the recipes for "bouquets and nosegays."

PEA (SWEET).—A very fine odor may be extracted from the flowers of the chick-vetch by enfleurage with any fatty body, and then digesting the pomade produced in spirit. It is, however, rarely manufactured, because a very close

IMITATION OF THE ESSENCE OF SWEET PEA

can be prepared thus:

Extract of tubereuse, ...	½ pint.
" fleur d'orange, ...	½ pint.
" rose from pomatum, ...	½ pint.
" vanilla, ...	1 oz.

In giving the recipe for "sweet pea" as above, we form it with the impression that its odor resembles the orange blossom, which similarity is approached nearer by the addition of the rose and tuberose.

The vanilla is used merely to give permanence to the scent on the handkerchief, and this latter body is chosen in preference to extracts of musk or ambergris, which would answer the same purpose of giving permanence to the more volatile ingredients; because the vanilla strikes the same key of the olfactory nerve as the orange blossom, and thus no new idea of a different scent is brought about as the perfume dies off from the handkerchief. When perfumes are not mixed upon this principle, then we hear that such and such a perfume becomes "sickly" or "faint" after they have been on the handkerchief a short time.

Peppermint.—The finest peppermint is that cultivated at Mitcham, Surrey; the sight of the numerous acres of this plant at that place is alone sufficient to show the public taste for this odor: strictly speaking, however, peppermint is consumed more through the mouth than the nose. Large as is our own consumption, England exports a considerable amount of the herb and of the otto of peppermint, which is readily obtained from it by distillation.

There are several plants which yield fragrant oils when distilled with steam. Among this class peppermint holds a high place on account of its exhilarating as well as its aromatic qualities. About three thousand acres of it are under cultivation in North America, viz., 1000 in New York and Ohio, and 2000 in St. Joseph's County, Michigan, which appears to be its headquarters. It is raised exclusively for its oil, about 7 lbs. of which is the average yield for an acre of plant, the price being 10*s*. per lb. The roots of the peppermint are planted thickly in rows, between which spaces are left for the cultivator to pass. The plant is generally cut about the latter part of August, and placed in small cocks like those of hay, which are allowed to stand in the fields some days before being taken in for distillation. Great care is exercised to prevent weeds growing among the plants so as to insure a pure article of oil. The fields are ploughed up and changed every five years; the first year's crop being generally the most abundant and the purest.

The apparatus for distilling peppermint oil consists of a boiler for raising steam, a still made of wood for receiving the charge of peppermint, a cooler for condensing the oil, and a receiver into which it flows. The whole apparatus is exceedingly simple. The plants are packed into the wooden still and trampled down with the feet; when a full charge is thus ready, the lid of the still is put on and steam admitted at the bottom by a pipe from the boiler. When the peppermint is heated to about 212° Fahr., its essential oil passes over with the steam into a worm which is placed in a cooler; and as it condenses into oil and water, it then passes out of the worm into a connected receiver, where the oil, as it floats on the surface, is lifted out with dippers, placed in tin cans, and is ready for sale.

The refuse mint taken from the still is placed in piles, dried, and then becomes tolerable fodder for sheep. About 12,000 lbs. of peppermint oil are shipped to England per annum, and the profits are about 18 per cent. upon the capital invested and the labor required to carry on the entire business.

At the great French Exhibition of Industry held in Paris in 1855, samples of the oil of peppermint made in this country were exhibited, and were considered the best on exhibition.

Peppermint is too familiar in the lozenge shape ever to become a favorite as a perfume; nevertheless perfumers use a fair portion of it in scenting soap and in the making of mouth washes: for these, however, it is employed by French perfumers more than by English. The fact is, fine peppermint is a scarcer article with them than us; so by a law of human nature—ever seeking for that which is the most difficult to obtain—the continental people esteem it more than we do. Dr. Geiseler, who has conducted some investigations on the respective merits of distilled oil of peppermint by steam heat and by the heat of the naked fire, has arrived at the following conclusions:

> Dried peppermint herb affords by distillation over the naked fire a greater quantity of oil than by distillation by the aid of steam.
>
> The oil obtained by steam distillation is specifically lighter, and of a brighter color, than that distilled over a naked fire.
>
> By the rectification of the latter by means of steam heat, an oil is obtained which is equal to that obtained by steam distillation, and has a specific gravity of .910, while the oil remaining behind by steam rectification in the retort shows a specific gravity of .930.
>
> Fresh peppermint herb gives by steam distillation and by distillation over a naked fire an equal quantity of oil.
>
> Dried peppermint herb contains two different oils, possessing different boiling-points and different specific gravities. The oil of higher specific gravity must be formed from that of the lower specific gravity during the drying and keeping of the herb, as the freshly-dried herb affords only one oil, of specific gravity .910.

One of the most esteemed articles of perfumery manufacture in which peppermint takes the initiative is the renowned *Eau Botot.*

PERU, BALSAM OF.—The odor of this substance resembles very nearly that of vanilla, but is not so generally pleasing; in appearance it resembles ordinary treacle or molasses. On account of its dark color it cannot be very much employed in spirit perfumery, but added to soap it imparts its fragrance and at the same time causes the soap to wash with a soft creamy lather. Balsam of Peru having also the repute of a mild medicinal action upon the skin, soap containing it is said to be "healing," hence is useful in winter for chapped skin; the proportions are, Balsam of Peru 2 lbs., curd soap 56 lbs., melted together.

Dr. C. Dorat, of La Union, State of Salvador, Central America, has furnished some interesting particulars of its production, which we append:

The tree is handsome, rather widely branching below, diminishing at top, and about fifty feet high. The flowers, which are very odoriferous, appear in the latter part of September and beginning of October, at the extremities of the branches, generally in pairs, numerous on each stem, white and unequal; calyx of a pale bluish green, and very glutinous, from exuding balsam. Leaves of a dark shining green. The fruit is almond-shaped, winged, and containing a white kernel, with much balsam.

A very superior balsam is sometimes collected from the flowers, but is very scarce, and never found in commerce. The tree produces after five years' growth, and attains a great age. It prefers a dry and poor soil, but is never found above an altitude of 1000 feet. The aroma is perceived at a distance of more than 100 yards. The tree having attained the proper age, five or six years, the *coseche*, or collecting, begins with the dry season early in November. The bark, for some distance up, is well beaten on four sides with the back of an axe, or other blunt instrument, until it has separated from the woody part, but without injury or breaking. This requires great care. In performing this operation, four intermediate strips of bark are left untouched, so as not to destroy the vitality of the tree.

Several notches or cuts are now made in the portions of beaten bark with a sharp *machite*, and fire is applied to the openings. The exuding balsam kindles, and is allowed to burn for a certain time and then extinguished.

The tree in this state is left for fifteen days, and carefully watched; after which time the balsam, which begins to run copiously, is received on cotton rags stuffed into the cuts. When saturated, they are pressed and thrown into the earthenware pots, with boiling water, on which the balsam soon floats like oil. It is occasionally skimmed off and thrown into clean jars, while fresh rags are added. The extraction from the tree is only made during four days of each week, that is, four *coseches* per month for each tree, and the average produce is from three to five pounds per week. As soon as the supply begins to fail, fresh cuts are made in the bark, fire again applied, and after the fifteen days' rest the extraction is resumed. In this manner the collecting continues until the first rains appear in April or May, when all *trabajo* or work ceases.

When thus prepared, the balsam is of a very dark brown color, dirty, and of the consistency of treacle. It is cleared and cleaned on the spot, by settling and reboiling, when the impure parts rise to the surface and are skimmed off. This impure part is sold for manufacturing an inferior tincture, used medicinally among the Indians.

The balsam in this state is purchased on the coast, at an average of from three to four *reals* per pound. It sometimes undergoes a second clearing, when it fetches a higher price as "refinado." When first cleaned it is of an amber color, which darkens on cooling; finally, after a few weeks, it becomes dark brown.

A good tree, with careful usage, will produce well for thirty years, after which it is allowed to remain five or six years at rest, or, as the Indians say, to renew its strength. After this period it will again yield for several years.

According to a manuscript copy of a Papal bull, at present among the old records in Tzalco, Balsamo Negro was in such high estimation, that in 1562 Pio IV, and in 1571 Pio V, issued orders authorizing the clergy to use this precious balsam in the consecration of the "*Sagrada Crisma*," and pronounced it sacrilege to destroy or injure the trees producing it. Copies of these bulls are, I am informed, still in existence among the archives of Guatemala. (See BALSAMS.)

The balsam imported into England as balsam of Peru, is produced within the department of Sonsonate, in the republic of Salvador, and along the coast of which department the trees from which it is extracted extend for leagues.

In the district of Cuisnagua there are 3574 trees, which yield altogether only 600 lbs. of the gum annually. With proper care in the extraction each tree would yield from two to three pounds, making the total quantity capable of being produced, in the before-mentioned district, about 10,000 lbs. When the season has been more rainy than usual the product is much lower; but in order to meet this difficulty, the Indians heat the body of the tree by fire,—by this means causing the gum to exude more freely; this operation invariably causes the decay of the tree.

Should this mode of extracting the gum by heat not be put a stop to, the tree will soon disappear from the coast. This fact has been brought to the notice of the Government, and inquiries into the matter have been made in consequence.

The Indians employed in collecting the gum say that such trees as are well shaded yield a greater quantity, but that those which have been planted by hand yield the most. This has been proved by experience, particularly in Calcutta, where a considerable quantity is yearly collected from trees which have been so planted. During the months of December and January, the gum oozes away spontaneously. This class of gum is called "Calcauzate." It is orange-colored, weighs less than the other, emits a strong odor, and is volatile and pungent.

The export of balsam from Salvador in 1855 was 22,804 lbs., valued at 19,827 dollars. On the coast of Chiquimulilla, in Guatemala, there are many trees of the description that yield the balsam; but hitherto it has not attracted the attention of the people of the country to collect it and bring it to market. That part of the coast in the state of Salvador, extending from Acajutla to Libertad, is emphatically termed the "Balsam Coast," because there only is collected the article known in commerce as the Balsam of Peru.

The particular district is intermediate to the two ports, and does not reach either of them within three or four leagues. Lying to the seaward of a low lateral ridge of mountains, the whole tract, excepting a few parts on the borders of the ocean, is so much broken up by spurs and branches thrown off from the main eminence, and so thickly covered by forest, as to be nearly impassable to a traveller on horseback. From this cause it is so rarely visited that very few residents, either of Sonsonate or Salvador, have ever entered it. Within this space are situated some five or six villages, inhabited solely by Indians, who hold no intercourse with other towns than what is necessary for carrying on their peculiar traffic. Their chief wealth is the balsam, of which they take to market from 18,000 to 23,000 lbs. weight annually. It is sold in small portions at a time, in the before-mentioned towns, to persons who purchase for exportation. The trees yielding this commodity are very numerous on this privileged spot, and apparently limited to it: for in other parts of the coast, seemingly identical in soil and climate, rarely an individual of the species is met with. The balsam is extracted by making an incision in the tree, whence it gradually exudes, and is absorbed by pieces of cotton rags inserted for the purpose. These, when thoroughly saturated, are replaced by others, which, as they are removed, are thrown into boiling water. The heat detaches it from the cotton, and the valuable balsam being of less gravity than the water, floats on the top, is skimmed off, and put in calabashes for sale. This balsam was long erroneously supposed to be a production of South America; for in the early periods of the Spanish dominion, and by the commercial regulations then existing relative to the fruits of this coast, it was usually sent by the merchants here to Callao, and being thence transmitted to Spain, it there received the name of the balsam of Peru, being deemed indigenous to that region. The real place of its origin was known only to a few mercantile men.—*The Technologist.*

PINEAPPLE.—Both Dr. Hofmann and Dr. Lyon Playfair have fallen into some error in their inferences with regard to the application of this odor in perfumery. After various practical experiments conducted in a large perfumatory, we have come to the conclusion that it cannot be so applied, simply because when the essence of pineapple is smelled at, the vapor produces an involuntary action of the larynx, producing cough, when exceedingly dilute. Even in infinitesimal portions it still produces disagreeable irritation of the air-pipes, which, if prolonged, such as is expected if used upon a handkerchief, is followed by intense headache. It is obvious, therefore, that the legitimate use of the essence of pineapple (butyric ether) cannot be adopted with benefit to the manufacturing perfumer, although invaluable to the confectioner as a flavoring material. What we have here said refers to the artificial essence of pineapple, or butyrate of ethyloxide, which, if very much diluted with alcohol, resembles the smell of pineapple, and hence its name; but how far the same observations are applicable to the true essential oil from the fruit or epidermis of the pineapple remains to be seen *when* we procure it. As the West Indian pineapples are now coming freely into the market, the day is probably not distant when demonstrative experiments can be tried; but hitherto, it must be remembered, our experiments have only been performed with a body *resembling in smell* the true essential oil of the fruit. The physical action of all ethers upon the human body is quite sufficient to prevent their application in perfumery, however useful in confectionery, which it is understood has to deal with another of the senses—not of smell, but of taste. The commercial "essence of pineapple," or "pineapple oil," and "jargonelle pear oil," are admitted only to be *labelled* such, but really are certain organic acid ethers. For the present, then, the perfumer must only look on these bodies as so many lines in the "Poetry of Science," which, for the present, are without practical application in his art. For the manufacture of artificial fruit-essence, see Appendix.

PIMENTO.—Both leaves and berries of this plant yield by distillation a fine otto; that however from the berries should be chosen by the perfumer. Several plants yield analogous ottos by the leaf and flower, or the leaf and the bark, such as petty grain from the orange leaf, and neroli from the flower, otto cinnamon from the cinnamon (inner bark), cassia (outer bark), and cinnamon leaf oil from the leaves. The odor of pimento very much resembles that of cloves, and in a gamut of odors would be placed on the scale one octave higher.

One hundredweight of cloves will yield eighteen pounds of otto, but a hundredweight of pimento will yield but six pounds of otto; hence, without some real advantage in odor, which it has not, pimento cannot commercially take the place of cloves.

PINK (*Dianthus Caryophyllus*).—The clove pink emits a most fragrant odor, "especially at night," says Darwin.

> "The lavish pink that scents the garden round"

is not, however, at present applied in perfumery, except in name.

IMITATION ESSENCE OF CLOVE PINK.

Esprit rose,	½ pint.
" fleur d'orange,	¼ pint.
" fleur de cassie,	¼ pint.
" vanilla,	2 oz.
Oil of cloves,	10 drops.

It is remarkable how very much this mixture resembles the odor of the flower, and the public never doubt its being the "real thing."

RHODIUM.—When rose-wood, the lignum of the *Convolvulus scoparius*, is distilled, a sweet-smelling oil is procured, resembling in some slight degree the fragrance of the rose, and hence its name. At one time, that is, prior to the cultivation of the rose-leaf geranium, the distillates from rose-wood and from the root of the *Genista canariensis* (Canary rose-wood), were principally drawn for the adulteration of real otto of roses; but as the geranium oil answers so much better, the oil of rhodium has fallen into disuse, hence its comparative scarcity in the market at the present day, though our grandfathers knew it well. One cwt. of wood yields about three ounces of oil.

Ground rose-wood is valuable as a basis in the manufacture of sachet powders for perfuming the wardrobe.

The French have given the name jacaranda to rose-wood, under the idea that the plant called jacaranda by the Brazilians yields it, which is not the case; "the same word has perhaps been the origin of palisander—palixander, badly written"—(*Burnett*).

· Rose.

> Go, crop the gay rose's vermeil bloom
> And waft its spoils, a sweet perfume,
> In incense to the skies. Ogilvie.

When Nero honored the house of a Roman noble with his imperial presence at dinner, there was something more than flowers; the host was put to an enormous expense by having (according to royal custom) all his fountains flinging up rose-water. While the jets were pouring out the fragrant liquid, while rose-leaves were on the ground, in the cushions on which the guests lay, hanging in garlands on their brows and in wreaths around their necks, the *couleur de rose* pervaded the dinner itself, and a rose pudding challenged the appetites of the guests. To encourage digestion there was rose-wine, which Heliogabalus was not only simple enough to drink, but extravagant enough to bathe in. He went even further, by having the public swimming-baths filled with wine of roses and absinth. After breathing, wearing, eating, drinking, lying on, walking over, and sleeping upon roses, it is not wonderful that the unhappy ancient grew sick. His medical man touched his liver, and immediately gave him a rose draught. Whatever he ailed, the rose was made in some fashion or another to enter into the remedy for his recovery. If the patient died, as he naturally would, then of him, more than of any other, it might be truly said that "he died of a rose in aromatic pain." Dr. Capellini relates the story of a lady, who fancied she could not bear the smell of a rose, and who once fainted at the sight of one of those flowers, which turned out after all to be artificial.*

---

* *Leisure Hour:* Mémoire sur l'Influence des Odeurs.

This queen of the garden loses not its diadem in the perfuming world. The oil of roses, or, as it is commonly called, the otto, or attar, of roses, is procured (contrary to so many opposite statements) simply by distilling the roses with water.

The otto, or attar, of rose of commerce is derived from the *Rosa centifolia provincialis.* Very extensive rose farms exist at Adrianople (Turkey in Europe); at Broussa, now famous as the residence of Abd-el-Kader; and at Uslak (Turkey in Asia); also at Ghazepore, in India.

The cultivators in Turkey are principally the Christian inhabitants of the low countries of the Balkan, between Selimno and Carloya, as far as Philippopolis, in Bulgaria, about 200 miles from Constantinople. Had not the late Russian aggression been "nipped in the bud," by the advance of the emblem of the rose, shamrock, thistle, and *fleur-de-lis*, it is nearly certain, that the scene of the recent war would have been laid not in the Crimea, but in the Rose Farms of the Balkan: nevertheless, who is there would have doubted the prowess of the descendants of the Houses of York and Lancaster? In good seasons, this district yields 75,000 ounces; but in bad seasons only 20,000 to 30,000 ounces of attar are obtained. It is estimated that it requires at least 2000 rose blooms to yield one drachm of otto.

My friend, Mr. Amerling, a Turkish drug merchant, residing at Constantinople, sends me the following particulars in reply to my request for information of a practical character relating to the production of otto of rose.

The roses are grown in Roumelia at Kizanlik, and the annual produce is about 500,000 meticaux; 10 or 12 okes* of roses will render 1 meticaux. The process of distilling is the same as that of spirit, *par alambic.* The produce of this year will be less than the previous ones, viz., only 200,000 to 250,000 meticaux.

The cultivation of the roses for extracting otto is the same as for the ordinary roses. I beg to add on the subject of distilling. You must put in a boiler as many okes of roses as of water, boil the same, and then extract oil *par alambic.* Then you remove the roses from the boiler, and boil again the first extract of the alambic, and it is then the second produce of the alambic that gives the oil of roses.

To 10 okes of roses you may put 40 or 50 okes of water in a boiler at alambic, and boil them well. You may add at the opening of the alambic a bottle which may contain about 7 okes. When full you remove it, and you place another one in its place, and when this also is full, you put in the same way a third one. In this way you obtain about 21 okes of oil in three bottles, of first, second, and third water, then you empty the boiler, and clean it well. Afterwards you pour into it the contents of the first bottle drawn and boil it. The alambic then will give the oil of roses floating on the water, which you separate. Then you go on with the same process with the second and third bottles. The first bottle produces better oil than the second, and the second better than the third. In the cultivation there is no particular feature, excepting that in the winter you cover the roots with earth, which you break on the approach of summer.

The important thing is to collect the roses at daybreak, otherwise the roses will not yield so much.

The otto from different districts slightly varies in odor; many places furnish an otto which solidifies more readily than others, and, therefore, this is not a sure guide of purity, though many consider it such. That which was exhibited in the Crystal Palace of 1851, as "from Ghazepore," in India, obtained the prize.

The otto of rose which is procured by distillation from the Provence rose of the south of France and of Nice has a very characteristic fragrance, imparted to it I believe by the bees, which carry the pollen of the orange blossom so numerous in this district into the rose-buds. The French otto is richer in stereopten than the Turkish; an ounce and a half will crystallize in a gallon of spirit at the same temperature that it requires three ounces of the best Turkish otto to do the same.

---

* One Turkish oke is about 2¼ to 2¾ lb. English.

> Attar of roses, made in Cashmere, is considered superior to any other; a circumstance not surprising, as according to Hugel, the flower is here produced of surpassing fragrance as well as beauty. A large quantity of rose-water twice distilled is allowed to run off into an open vessel, placed over night in a cool running stream, and in the morning the oil is found floating on the surface in minute specks, which are taken off very carefully by means of a blade of sword-lily. When cool it is of a dark green color, and as hard as resin, not becoming liquid at a temperature about that of boiling water. Between 500 and 600 pounds' weight of leaves is required to produce one ounce of the attar.*

At Rome, the odor of the rose was in such request, that Lucullus expended fabulous sums, in order to be able to have it at all seasons. But in our day pure otto of roses, from its cloying sweetness, has not many admirers: when diluted, however, there is nothing equal to it in odor, especially if mixed in soap, to form rose soap, or in pure spirit, to form the esprit de rose. The soap not allowing the perfume to evaporate very fast, we cannot be surfeited with the smell of the otto.

The finest preparation of rose as an odor is made at Grasse and Cannes, in France. Here the flowers are not treated for the otto, but are subjected to the process of maceration in fat, or in oil, as described under JASMINE, HELIOTROPE, VIOLET. It requires 10 kilogrammes of roses to enfleurage one kilogramme of grease. The value of the roses varies from 50*c.* to 1*f.* 25*c.* the kilogramme, that is about 6*d.* to 1*s.* the pound. After the maceration process has been worked for a few days, the pomade is then subject to the enfleurage operation.

---

* Indian Encyclopædia.

The rose pomade thus made, if digested in alcohol say 8 lbs. of No. 24 pomade to 1 gallon of spirit, yields an esprit de rose of the first order, very different in smell to that which is made by the addition of otto to spirit. It is difficult to account for this difference, but it is sufficiently characteristic to form a distinct odor. See the articles on FLEUR D'ORANGE and NEROLI (pp. 124, 131), which have similar qualities, previously described. The esprit de rose made from the French rose pomade is never sold retail by the perfumer; he reserves this to form part of his *recherché* bouquets.

Some wholesale druggists have, however, been selling it now for some time to country practitioners, for them to form extemporaneous rose-water, which it does to great perfection. Roses are cultivated to a large extent in England, near Mitcham, in Surrey, for perfumers' use, to make rose-water. In the season when successive crops can be got, which is about the end of June, or the early part of July, they are gathered as soon as the dew is off, and sent to London in sacks. When they arrive, they are immediately spread out upon a cool floor; otherwise, if left in a heap, they heat to such an extent, in two or three hours, as to be quite spoiled. There is no organic matter which so rapidly absorbs oxygen, and becomes heated spontaneously, as a mass of freshly-gathered roses.

To preserve these roses, the London perfumers immediately pickle them; for this purpose, the leaves are separated from the stalks, and to every bushel of flowers, equal to about 6 lbs. weight, 1 lb. of common salt is thoroughly rubbed in. The salt absorbs the water existing in the petals, and rapidly becomes brine, reducing the whole to a pasty mass, which is finally stowed away in casks. In this way they will keep almost any length of time, without the fragrance being seriously injured. A good ROSE-WATER can be prepared by distilling 12 lbs. of pickled roses, and 2½ gallons of water. "Draw" off 2 gallons; the product will be the double-distilled rose-water of the shops. The rose-water that is imported from the south of France is, however, very superior in odor to any that can be produced here. As it is a residuary product of the distillation of roses for procuring the attar, it has a richness of aroma which appears to be inimitable with English-grown roses.

So ancient is the custom of using fragrant waters, that one of the oldest authors repeatedly mentions it. In the Arabian Nights (written prior to the Christian era), in the story of Aboulhassan, it will be remembered that

> When the prince of Persia visited the queen, and that he had partaken of refreshments, the slaves brought him golden basins filled with odoriferous water to wash in, and that after the declaration of love by the queen and the prince they both fainted, but were brought to themselves again by throwing odoriferous water upon their faces, and by giving them things to smell.

There are six modifications of essence of rose for the handkerchief, which are the *ne plus ultra* of the perfumer's art. They are—esprit de rose triple, essence of white roses, essence of tea-rose, essence of moss-rose, twin-rose, and Chinese rose. The following are the recipes for their formation:

Esprit de Rose Triple.

Rectified alcohol,	1 gallon.
Otto of rose,	3 oz.

Those who admire the rose's fragrance will find the following formula yield a most *recherché* quality:

Piesse's Twin-Rose.

Rose pomade (No. 24),	8 lbs.
Spirit (60 over proof),	1 gallon.
French otto of rose,	1½ oz.

Let the spirit stand on the pomade for a month, then strain it off and add the otto. Mix at a summer heat; in the course of a quarter of an hour the whole of the otto is dissolved, and is then ready for bottling and sale. In the winter season beautiful crystals of the otto—if it is good—appear disseminated through the esprit. (It requires twice the quantity of Turkish otto to crystallize at the same temperature.)

Essence of Moss Rose.

Spirituous extract from French rose pomatum,	1 quart.
Esprit de rose triple,	1 pint.
Extract fleur d'orange pomatum,	1 pint.
" of ambergris,	½ pint.
" musk,	4 oz.

Allow the ingredients to remain together for a fortnight; then filter, if requisite, and it is ready for sale.

ESSENCE OF WHITE ROSE.

Esprit de rose from pomatum,	1 quart.
“ “ triple,	1 quart.
“ violette,	1 quart.
Extract of jasmine,	1 pint.
“ patchouly,	½ pint.

ESSENCE OF TEA ROSE.

Esprit de rose pomade,	1 pint.
“ “ triple,	1 pint.
Extract of rose-leaf geranium,	1 pint.
“ santal-wood,	½ pint.
“ neroli,	¼ pint.
“ orris,	¼ pint.

CHINESE YELLOW ROSE.

Esprit rose triple,	2 pints.
“ tuberose,	2 pints.
“ tonquin,	¼ pint.
“ vervaine,	¼ pint.

ROSEMARY.

> There's rosemary, that's for remembrance.
>
> SHAKSPEARE.

By distilling the *Rosmarinus officinalis* a thin limpid otto is procured, having the characteristic odor of the plant, which is more aromatic than sweet. One hundredweight of the fresh herb yields about 24 ounces of oil. Otto of rosemary is very extensively used in perfumery, especially in combination with other ottos for scenting soap. Eau de Cologne cannot be made without it, and in the once famous “Hungary water” it is the leading ingredient. The following is the composition of—

HUNGARY WATER.

Grape spirit (60 over proof),	1 gallon.
Otto of Hungarian rosemary,*	2 oz.
" lemon peel,	1 oz.
" balm (*melissa*),	1 oz.
" mint,	½ drachm.
Esprit de rose,	1 pint.
Extract of fleur d'orange,	1 pint.

It is put up for sale in a similar way to eau de Cologne, and is said to take its name from one of the queens of Hungary, who is reported to have derived great benefit from a bath containing it, at the age of seventy-five years. There is no doubt that clergymen and orators, while speaking for any time, would derive great benefit from perfuming their handkerchiefs with Hungary water, as the rosemary it contains excites the mind to vigorous action, sufficient of the stimulant being inhaled by occasionally wiping the face with the handkerchief wetted with these "waters." Shakspeare giving us the key, we can understand how it is that such perfumes containing rosemary are universally said to be so refreshing!

RUE.—What our Lord says (Matthew 23 : 23, and Luke 11 : 42)—"Ye pay tithes of mint and rue, and all manner of herbs, but have omitted the weightier matters of the law,"—is indicative that the fragrance of rue had caused it to be grown to an extent sufficient to call for a tithe of it for the church use at a very early period. The odor of rue is exceedingly penetrating and diffusive; on this account it has from time immemorial been esteemed highly prophylactic.

---

* The continental rosemary yields quite a different smelling otto to that grown in England.

The sprigs of rue placed on the bar of the Central Criminal Court will be observed by every visitor to Newgate. The origin of its use there is traced to the time when the prison cell was indeed a never-cleansed den of carnivorous animals. The gaol fever and the gaol distemper were then a natural result of being immured at Newgate; and to prevent infection from "the prisoners at the bar" to the "worthy judge," the practice of distributing rue throughout the court took its rise; and its use is maintained even to the present day. Happily, however, through better discipline, the hygienic properties of rue are not required: but its presence there is an illustration historically worthy of record by Macaulay or Knight. Rue yields up its odoriferous principle or otto by distillation: its principal use is in the manufacture of aromatic, toilet, hygienic, and cosmetic vinegars.

SAGE.—A powerful-scenting otto can be procured by distillation from any of the *Salviæ*. It is rarely used, but is nevertheless very valuable in combination for scenting soap. Dried sage-leaves, ground, will compound well for sachets.

SANTAL—(*Santalum album*).

> The santal tree perfumes, when riven,
> The axe that laid it low. CAMERON.

This is an old favorite with the lovers of scent; it is the wood that possesses the odor. The finest santal-wood grows in the island of Timor and the Santal-wood Islands, where it is extensively cultivated for the Chinese market. In the religious ceremonies of the Brahmins, Hindoos, and Chinese, santal-wood is burned, by way of incense, to an extent almost beyond belief. The *Santala* grew plentifully in China, but the continued offerings to the numerous images of Boodh have almost exterminated the plant from the Celestial Empire; and such is the demand, that it is

Santal-wood.

about to be cultivated in Western Australia, in the expectation of a profitable return, which we doubt not will be realized; England alone would consume tenfold the quantity it does were its price within the range of other perfuming substances. The otto which exists in the santal-wood is readily procured by distillation; one hundredweight of good wood will yield about 30 ounces of otto.

The white ant, which is so common in India and China, eating into every organic matter that it comes across, appears to have no relish for santal-wood; hence it is frequently made into caskets, jewel-boxes, deed-cases, &c. This quality, together with its fragrance, renders it a valuable article to the cabinet-makers of the East.

The otto of santal is remarkably dense, and is above all others oleaginous in its appearance, and, when good, is of a dark straw color. When dissolved in spirit, it enters into the composition of a great many of the old-fashioned bouquets, such as "Maréchale" and others, the formulæ of which will be given hereafter. Perfumers thus make what is called

EXTRAIT DE BOIS DE SANTAL.

Rectified spirits,	7 pints.
Esprit de rose,	1 pint.
Essential oil, *i. e.*, of otto, of santal,	3 oz.

All those EXTRACTS, made by dissolving the otto in alcohol, are nearly white, or at least only slightly tinted by the color of the oil used. When a perfumer has to impart a delicate *odeur* to a lady's *mouchoir*, which in some instances costs "no end of money," and is an object, at any cost, to retain unsullied, it behooves his reputation to sell an article that will not stain a delicate white fabric. Now, when a perfume is made in a direct manner from any wood or herb, as tinctures are made, that is, by infusing the wood in alcohol, there is obtained, besides the odoriferous substance, a solution of coloring and extractive matter, which is exceedingly detrimental to its fragrance, besides seriously staining any cambric handkerchief that it may be used upon; and for this reason this latter method should never be adopted, except for use upon silk handkerchiefs.

The odor of santal assimilates well with rose; and hence, prior to the cultivation of rose-leaf geranium, it was used to adulterate otto of roses; but is now seldom employed for that purpose.

By a "phonetic" error, santal is often printed "sandal," and "sandel."

The otto of santal is often adulterated with castor oil, which, being soluble in spirit, is difficult to detect.

SASSAFRAS.—Some of the perfumers of Germany use a tincture of the wood of the *Laurus Sassafras* in the manufacture of hair-washes and other nostrums; but as, in our opinion, it has rather a "physicky" smell than flowery, we cannot recommend the German recipes. The *Eau athénienne*, notwithstanding, has some reputation as a hair-water, but is little else than a weak tincture of sassafras.

SPIKE.—French oil of lavender, which is procured from the *Lavandula Spica*, is generally called oil of spike. (See LAVENDER.)

SPIKENARD (*Nardostachys Jatamansi*).—This odoriferous plant belongs to the Valerian order, and although its fragrance is generally considered unpleasant to European nostrils, it is so much admired by Eastern natives that some of the most esteemed Asiatic perfumes are composed of valerian and spikenard. The fragrance of spikenard is frequently mentioned in the Holy Volume. "While the king sitteth at his table, my spikenard sendeth forth the smell thereof." (Song of Solom. 1:12.) "There came a woman having an alabaster box of ointment of spikenard, very precious." (Mark 14 : 3.) It is nevertheless almost unknown to English and French perfumers.

STORAX.—Priests and perfumers are very much indebted to that family of plants termed by botanists *Styraceæ:* from one and another of this family vast quantities of odoriferous gums and balsams are procured, which are used for altar incense and for perfuming private dwellings. In commerce there are several kinds of storax: the hard red quality is termed *Jews' incense;* the calamita storax is so named from the Latin *calami* (rushes or quills), in reference to its form in the market. The true storax, however, to which we now refer, is a fragrant balsam which exudes from the wounded *Liquidambar orientale*, a shrubby tree common in Asia Minor.

EXTRACTION OF THE LIQUID STORAX.—In June and July, the outer bark is stripped off on one side of the tree and (according to Lieut. Campbell) made into bundles and reserved for the purpose of fumigation. The inner bark is then scraped off with a semicircular or sickle-shaped knife, and thrown into pits until a sufficient quantity has been collected. Mr. Maltass states that it is then packed into strong horse-hair bags and subjected to pressure in a wooden lever press. Upon removal from the press, hot water is thrown over the bags, and they are pressed a second time, after which the greater portion of the resin will have been extracted.

Lieut. Campbell's account is a little different: he says the inner bark is boiled in water over a brisk fire, upon which the resinous part comes to the surface, and is skimmed off. The boiled bark is next put into hair sacks and pressed, boiling water being added to assist in the extraction of the resin, or, as it is termed, *yagh* (*i. e.*, *oil*).

Dr. McCraith says that the storax collectors, who are chiefly a tribe of wandering Turcomans called *Yuruks*, are armed with a triangular iron scraper, with which they scrape off, together with the juice of the tree, a certain quantity of bark, which they collect in leathern pouches suspended to their belts. When a sufficient quantity has been obtained, it is boiled in a large copper, and the separated liquid resin is run into barrels. The residual bark is placed in hair-cloth and pressed in a rude press, the extracted resin being added to the general mass.

The product obtained by the processes he described, is the gray, opaque, semi-fluid resin, well known as *Liquid Storax*.

The bark from which the *liquid storax* has been extracted, is emptied out of the bags and exposed in the sun to dry, after which it is shipped to the Greek and Turkish islands and to many towns in Turkey, where it is much esteemed for the purpose of fumigation, although since the disappearance of the plague, its employment has greatly diminished.

Lieut. Campbell states that the quantity of *liquid storax* annually extracted, amounts to about 20,000 okes (500 cwt.) from the districts of Giova and Ullà; and 13,000 okes (325 cwt.) from those of Marmorizza and Isgengak.

It is exported in casks to Constantinople, Smyrna, Syra, and Alexandria. Some is also packed with a certain proportion of water in goat-skins and sent, either by boats or overland, to Smyrna, where it is transferred to casks and shipped mostly to Trieste.*

The odor of storax is the uniting link between—as the late lamented Professor Johnson distinguished them—"the smells we dislike" and the "odors we enjoy;" it connects the fragrance of the jonquille with the stench of coal-tar naphtha: the smell of this latter substance has become familiar, since it is used to dissolve gutta percha, and is commonly known as "solution." Now the smell of this naphtha certainly ranks with those "we dislike;" yet storax resembles it, "to a smell," when in bulk; yet, when divided into such an attenuated form as we conceive odors to be given out by living plants, then storax resembles the exquisite fragrance of the jonquille and tuberose! So the whirlwind and hurricane become the gentle zephyr that makes the "aspens quiver." So the fire-proof block of iron becomes, when divided, more combustible than gunpowder. So the silken fibre becomes a rope to stay the course of a ship. So the lightning flash becomes the electricity which makes one's "hair stand on end."

---

* D. Hanbury (read before the Pharmaceutical Society).

Quantity is equivalent to an allotropic condition of matter; quantity produces opposite physical effects upon the faculties. About an ounce of storax dissolved in one pint of rectified spirit produces the TINCTURE OF STORAX of the perfumer's laboratory. Its principal use is to give permanence of odor to analogous fragrances that are prepared by maceration: thus extract of tuberose or jonquille, procured by infusing the tuberose pomade in spirit, requires for every pint about one ounce of tincture of storax to be added as a "fixing" to the handkerchief. It is also useful in combination with other scents to imitate certain odors of plants: thus it is found in lily of the valley, &c.

STORAX and TOLU are used in perfumery in the same way as benzoin, namely, by solution in spirit as a tincture. An ounce of tincture of storax, tolu, or benzoin, being added to a pound of any very volatile perfume, gives a degree of permanence to it, and makes it last longer on the handkerchief than it otherwise would: thus, when any perfume is made by the solution of an otto in spirit, it is usual to add to it a small portion of a substance which is less volatile, such as extract of musk, extract of vanilla, ambergris, storax, tolu, orris, vitivert, or benzoin; the manufacturer using his judgment and discretion as to which of these materials are to be employed, choosing, of course, those which are most compatible and in harmony with the odor he is making. This can be ascertained by reference to the Gamut, pages 42, 43. Every octave is in harmony.

The power which these bodies have of "fixing" a volatile substance, renders them valuable to the perfumer, independent of their aroma, which is due in many cases to benzoic and cinnamic acids, slightly modified by an essential oil peculiar to each substance, and which is taken up by the alcohol, together with a portion of resin. When the perfume is put upon a handkerchief, the most volatile bodies disappear first: thus, after the alcohol has evaporated, the odor of the ottos appears stronger; if it contains any resinous body, the ottos are held in solution, as it were, by the resin, and thus retained on the fabric. Supposing a perfume to be made of otto only, without any "fixing" substance, then, as the perfume "dies away," the olfactory nerve, if tutored, will detect its composition, for it spontaneously analyzes itself, no two ottos having the same volatility: thus, make a mixture of rose, jasmine, and patchouly; the jasmine predominates first, then the rose, and, lastly, the patchouly, which will be found hours after the others have disappeared.

SYRINGA.—The flowers of the *Philadelphus coronarius*, or common garden syringa, have an intense odor resembling the orange blossom; so much so, that in America the plant is often termed "mock orange." A great deal of the pomatum sold as pomade surfin, à la fleur d'orange, by the manufacturers of France, is nothing more than fine suet perfumed with syringa blossoms by the maceration process. Fine syringa pomade could be made in England at a quarter the cost of what is paid for the so-called orange pomatum.

THYME.—All the different species of thyme, but more particularly the lemon thyme, the *Thymus Serpyllum*, as well as the marjorams, origanum, &c., yield by distillation fragrant ottos, that are extensively used by manufacturing perfumers for scenting soaps; though well adapted for this purpose, they do not answer at all in any other combinations. Both in grease and in spirit all these ottos impart an herby smell (very naturally) rather than a flowery one, and as a consequence, they are not considered *recherché*.

When any of these herbs are dried and ground, they usefully enter into the composition of sachet powders.

TOLU. See BALSAMS.

· TONQUIN, or TONKA.—The seeds of the *Dipterix odorata* are the tonquin or *coumarouma* beans of commerce. When fresh they are exceedingly fragrant, having an intense odor of newly made hay.—The *Anthoxanthum odoratum*, or sweet-smelling vernal grass, to which new hay owes its odor, probably yields identically the same fragrant principle, and it is remarkable that both tonquin beans and vernal grass, while actually growing, are nearly scentless, but become rapidly aromatic when severed from the parent stock.

Chemically considered, tonquin beans are very interesting, containing, when fresh, a fragrant volatile otto (to which their odor is principally due), benzoic acid, a fat oil, and a neutral principle—*Coumarin*. In perfumery they are valuable, as, when ground, they form with other bodies an excellent and permanent sachet, and, by infusion in spirit, the tincture or extract of tonquin enters into a thousand of the compound essences; but on account of its great strength it must be used with caution, otherwise people say the perfume is "snuffy," owing to the predominance of the odor and its well-known use in the boxes of those who indulge in the titillating dust.

EXTRACT OF TONQUIN BEAN.

Tonquin beans,	1 lb.
Rectified spirit,	1 gallon.

Digest for a month at a summer heat. Even after this maceration they are still useful when dried and ground in those compounds known as POT-POURRI, OLLA PODRIDA, &c. The extract of tonquin, like extract of orris and extract of vanilla, is never sold pure, but is only used in the manufacture of compound perfumes. It is the leading ingredient in *Bouquet du Champ*—the Field Bouquet—the great resemblance of which to the odor of the hay-field, renders it a favorite to the lovers of the pastoral.

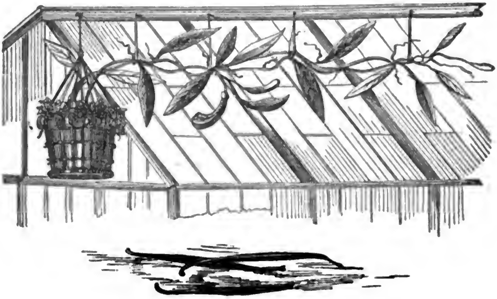
TUBEROSE.—One of the most exquisite odors with which we are acquainted is obtained by *enfleurage* from the tuberose flower. It is, as it were, a nosegay in itself, and reminds one of that delightful perfume observed in a well-stocked flower-garden at evening close; consequently it is much in demand by the perfumers for compounding sweet essences. It requires three kilogrammes of flowers to perfume one kilogramme of grease, and the value of the flowers is about five francs the kilo.

EXTRACT OF TUBEROSE.

Eight pounds of No. 24 tuberose pomatum, cut up very fine, is to be placed into one gallon of the best rectified spirit. After standing for three weeks or a month at summer heat, and with frequent agitation, it is fit to draw off, and being strained through cotton-wool, is ready either for sale or use in the manufacture of bouquets.

This essence of tuberose, like that of jasmine, is exceedingly volatile, and if sold in its pure state quickly "flies off" the handkerchief; it is therefore necessary to add some fixing ingredient, and for this purpose it is best to use one ounce of tincture of storax, or half an ounce of extract of vanilla, to every pint of tuberose.

VANILLA.—The pod or bean of the *Vanilla planifolia* yields a perfume of rare excellence. When good, and if kept for some time, it becomes covered with an efflorescence of needle crystals, possessing properties similar to benzoic acid, but differing from it in composition: these crystals may be sublimed by heat of sand-bath. Few objects are more beautiful to look upon than this, when viewed by a microscope with the aid of polarized light. The finest vanilla is grown in Mexico: the pods or beans are about eight and a half inches long.



Vanilla plant.

An inferior quality, the produce of Central America, is often lotted at the drug sales in London. Of this kind, the beans are not more than seven inches long, and are drier and not so pulpy as the true Mexican variety.

Johnston states that, "physiologically, the fragrance of vanilla acts upon the system as an aromatic stimulant, exhilarating the mental functions, and increasing generally the energy of the animal system." From five to six hundredweight of vanilla are annually imported, on an average, into this country; from some unknown cause, however, this importation is very irregular, and, as a consequence, the price varies considerably, from 125*s.* per pound to the present price of 26*s.* Our West Indian colonists should look to this. They are deploring the loss of commerce, and we asking for things which *they can produce*, and yet no effort is being made by them to supply European wants. I press this vanilla question on them, because Europe would consume a hundred times as much vanilla as it does were the price reduced by an increased production.

Extract of Vanilla.

Vanilla pods, ...	½ lb.
Rectified spirit, ...	1 gallon.

Slit the pods from end to end, so as to lay open the interior, then cut them up in lengths of about a quarter of an inch, macerate with occasional agitation for about a month; the tincture thus formed will only require straining through cotton to be ready for any use that is required. In this state it is rarely sold for a perfume, but is consumed in the manufacture of compound odors, bouquets, or nosegays, as they are called.

Extract of vanilla is also used largely in the manufacture of hair-washes, which are readily made by mixing the extract of vanilla with either rose, orange, elder, or rosemary water, and afterwards filtering.

We need scarcely mention that vanilla is greatly used by cooks and confectioners for flavoring.

VERBENA, or VERVAINE.—The scented species of this plant, the lemon verbena, *Aloysia citriodora* (Hooker), gives one of the finest perfumes with which we are acquainted; it is well known as yielding a delightful fragrance by merely drawing the hand over the plant; some of the little vessels or sacs containing the otto must be crushed in this act, as there is little or no odor by merely smelling at the plant.

The otto, which can be extracted from the leaves by distillation with water, on account of its high price, is scarcely, if ever, used by the manufacturing perfumer, but it is most successfully imitated by mixing the otto of lemon grass, *Andropogon Nardus*, with rectified spirit, the odor of which resembles the former to a nicety. The following is a good form for making the

EXTRACT OF VERBENA.

Rectified spirit, ...	1 pint.
Otto of lemon-grass, ...	3 drachms.
" lemon peel, ...	2 oz.
" orange-peel, ...	½ oz.

After standing together for a few hours and then filtering, it is fit for sale.

Another mixture of this kind, presumed by the public to be made from the same plant, but of a finer quality, is composed thus: it is sold under the title—

Extrait de Verveine.

Rectified spirit,	1 pint.
Otto of orange-peel,	1 oz.
" lemon-peel,	2 oz.
" citron-zeste,	1 drachm.
" lemon-grass,	2½ drachms.
Extract de fleur d'orange,	7 oz.
" " tubereuse,	7 oz.
Esprit de rose,	½ pint.

This mixture is exceedingly refreshing, and is one of the most elegant perfumes that is made, and being white, it does not stain the handkerchief. It is best when sold fresh made, as by age the citrine oils oxidize, and the perfume acquires an ethereal odor, and then customers say "it is sour." The vervaine thus prepared enters into the composition of a great many of the favorite bouquets that are sold under the title Court Bouquet, and others which are mixtures of violet, rose, and jasmine, with verbena or vervaine in different proportions. In these preparations, as also in eau de Portugal, and in fact where any of the citrine ottos are used, a much finer product is obtained by using grape-spirit or brandy in preference to the English corn-spirit as a solvent for them. Nor do they deteriorate so quickly in French spirit as in English; whether this be due to the oil of wine (œnanthic ether) which the former contains or not we cannot say, but think it must be so.

Violet.

> The forward violet thus did I chide:
> Sweet thief, whence didst thou steal thy sweet that smells,
> If not from my love's breath?
>
> Bard of Avon.

The perfume exhaled by the *Viola odorata* is so universally admired, that to speak in its favor would be more than superfluous. The demand for the "essence of violets" is far greater than the manufacturing perfumers are at present able to supply, and, as a consequence, it is difficult to procure the genuine article through the ordinary sources of trade.

Real violet is, however, sold by many of the retail perfumers of the West End of London, but at a price that prohibits its use except by the affluent or extravagant votaries of fashion. The violet farms from whence the flowers are procured to make this perfume are very extensive at Nice, Sardinia (now France); also in the neighborhood of Florence. The true smelling principle or otto of violets has recently been isolated by M. March, of Nice, a sample of which is to be seen at the Laboratory of Flowers, 2 New Bond Street. A very concentrated solution in alcohol impresses the olfactory nerve with the idea of the presence of hydrocyanic acid, which is probably a true impression. Burnett says that the plant *Viola tricolor* (heart's-ease), when bruised, smells like peach-kernels, and doubtless, therefore, contains prussic acid.

It has been remarked, also, that persons who have died from the effects of prussic acid, "smell like violets."

The flowers of the heart's-ease are scentless, but the plant evidently contains a principle which, in other species of the viola, is eliminated as the "sweet that smells," so beautifully alluded to by Shakspeare.

For commercial purposes, the odor of the violet is procured in combination with spirit, oil, or suet, precisely according to the methods previously described for obtaining the aroma of some other flowers before mentioned, such as those for cassie, jasmine, orange-flower, namely, by maceration, or by *enfleurage;* the former method being principally adopted first, followed by *enfleurage*, and, when "essence" is required, digesting the pomade in rectified alcohol.

Good essence of violets, thus made, is of a beautiful green color, and, though of a rich deep tint, has no power to stain a white fabric, and its odor is perfectly natural.

ESSENCE OF VIOLETS,

As prepared for retail sale, is thus made, according to the quality and strength of the pomade: Take from six to eight pounds of the violet pomade, chop it up fine, and place it in one gallon of perfectly clean (free from fusel oil) rectified spirit, allow it to digest for three weeks or a month, then strain off the essence, and to every pint thereof add three ounces of tincture of orris root, and three ounces of esprit de cassie; it is then fit for sale.

On account of the inodorous quality of the English spirit, the essence of violet made in Britain is very superior to the continental violet, which always smells of brandy.

We have often seen displayed for sale in druggists' shops plain tincture of orris root, done up in nice bottles, with labels upon them inferring the contents to be "Extract of Violet;" customers thus once "taken in" are not likely to be so a second time.

A good Imitation Essence of Violets is best prepared thus:

Spirituous extract of cassie pomade,	1 pint.
Esprit de rose, from pomade,	½ pint.
Tincture of orris,	½ pint.
Spirituous extract of tuberose pomade,	½ pint.
Otto of almonds,	3 drops.

After filtration it is fit for bottling. In this mixture, it is the extract of cassie which has the leading smell, but modified by the rose and tuberose, it becomes very much like the violet. Moreover, it has a green color, like the extract of violet; and as the eye influences the judgment by the sense of taste, so it does with the sense of smell. Extract of violet enters largely into the composition of several of the most popular bouquets, such as extract of spring flowers and many others.

Violet flowers are worth about 4*f.* 50*c.* the kilo, or 2*s.* per pound, and it requires 4 kilos of flowers to enflower one kilo of fat to make the violet pomade.

Vitivert.

Vitivert, or Kus-Kus, is the rhizome of an Indian grass. In the neighborhood of Calcutta, and in that city, this material has an extensive use by being manufactured into awnings, blinds, and sunshades, called Tatty. During the hot seasons an attendant sprinkles water over them; this operation cools the apartment by the evaporation of the water, and, at the same time, perfumes the atmosphere, in a very agreeable manner, with the odoriferous principle of the vitivert. It has a smell between the aromatic or spicy odor and that of flowers—if such a distinction can be admitted. We classify it with orris root, not that it has any odor resembling it, but because it has a like effect in use in perfumery, and because it is prepared as a tincture for obtaining its odor.

About four pounds of the dried vitivert, as it is imported, being cut small and set to steep in a gallon of rectified spirits for a fortnight, produces the

Essence of Vitivert of the shops. In this state it is rarely used as a perfume, although it is occasionally asked for by those who, perhaps, have learnt to admire its odor by their previous residence in the "Eastern clime." The extract, essence, or tincture of vitivert, enters into the composition of several of the much-admired and old bouquets manufactured in the early days of perfumery in England, such as "*Mousseline des Indes*," for which preparation, M. Delcroix, in the zenith of his fame, created quite a *furor* in the fashionable world.

Essence of vitivert is also made by dissolving 2 oz. of otto of vitivert in 1 gallon of spirit; this preparation is stronger than the tincture, as above.

Marechale and Bouquet du Roi, perfumes which have also "had their day," owe much of their peculiarity to the vitivert contained in them.

Bundles of vitivert are sold for perfuming linen and preventing moth, and, when ground, it is used to manufacture certain sachet powders.

Otto of vitivert is procurable by distillation; a hundredweight of vitivert yields about 14 oz. of otto, which in appearance very much resembles otto of santal. I have placed a sample of it in the museum at Kew.

VOLKAMERIA.—An exquisite perfume is sold under this name, presumed, of course, to be derived from the *Volkameria inermis* (Lindley). Whether it has a smell resembling the flower of that plant, or whether the plant blooms at all, we are unable to say. It is a native of India, and seems to be little known even in the botanic gardens of this country; however, the plant has a name, and that's enough for the versatile Parisian perfumer, and if the mixture he makes "takes" with the fashionable world—the plant which christens it has a fine perfume for a certainty!

ESSENCE OF VOLKAMERIA.

Esprit de violette,	1 pint.
" tubereuse,	1 pint.
" jasmine,	¼ pint.
" rose,	½ pint.
Essence de musk,	2 oz.

WALLFLOWER (*Cheiranthus*).

> Where the wallflower scents the dewy air.
>
> BURNS.

Exquisite as is the odor of this flower, it is not used in perfumery, though no doubt it might be, and very successfully too, were the plant cultivated for that purpose. To this flower we would direct particular attention, as one well adapted for experiments to obtain its odoriferous principle in this country, our climate being good for its production. The mode of obtaining its odor has been indicated when we spoke of HELIOTROPE and JASMINE. And if it answers on the small scale, there is little doubt of success in the large way, and there is no fear but that the scent of the old English wallflower will meet with a demand. Instigated by this suggestion, made in the first edition of this work, Miss Procter, of Friskney, Lincoln, has produced some very good samples of natural wallflower pomade.

An IMITATION ESSENCE OF WALLFLOWER can be compounded thus:

Extract de fleur d'orange,	1 pint.
" vanilla,	½ pint.
Esprit de rose,	1 pint.
Extract of orris,	½ pint.
" cassie,	½ pint.
Essential oil of almonds,	5 drops.

Allow this mixture to be made up for two or three weeks prior to putting it for sale.

WINTER GREEN (*Gaultheria procumbens*).—A perfuming otto can be procured by distilling the leaves of this plant: it is principally consumed in the perfuming of soaps. Mr. Bastick remarks, that

> The chemical history of this oil is one of great importance and interest, affording, as it does, one of the examples where the progress of modern chemistry has succeeded in producing artificially a complex organic body, previously only known as the result of vital force.
>
> This volatile oil is obtained from the winter-green, an American shrub of the heath family, by distillation. When this plant is distilled, at first an oil passes over which consists of $C_{10} H_8$, but when the temperature reaches 464° Fahr., a pure oil distils into the receiver. Therefore, the essential oil of this plant, like many others, consists of two portions—one a hydrocarbon, and the other an oxygenated compound; this latter is the chief constituent of the

oil, and that which is of so much chemical interest, from the fact that it has been artificially prepared.

It is termed, when thus prepared, the spiroylate of the oxide of methyl, and is obtained when two parts of methylene, one and a half parts of spiroylic acid, and one part of sulphuric acid are distilled together. It is a colorless liquid, of an agreeable aromatic odor and taste; it dissolves slightly in water, but in all proportions in ether and alcohol; it boils between 411° and 435° Fahr., and has a specific gravity of 1.173. This compound expels carbonic acid from its combinations, and forms a series of salts, which contain one atom of base and one atom of spiroylate of the oxide of methyl. It behaves therefore as a conjugate acid. Its formula is $C_{14}.H_5\,O_5 + C_2\,H_3\,O$.

The spiroylic acid may be separated from the natural oil by treating the latter with a concentrated solution of caustic potash at a temperature of 113° Fahr., when wood spirit is formed and evaporates, and the solution contains the spiroylate of potash, from which, when decomposed with sulphuric acid, the spiroylic acid separates and subsides in the fluid.

Spiroylic acid is also formed by the oxidation of spiroyligenic acid, and when saligenin, salicin, courmacin, or indigo, is heated with caustic potash.

Upon the strength of the name of this odorous plant a very nice handkerchief perfume is made, called

ICELAND WINTER GREEN.

Esprit de rose,	1 pint.
Essence of lavender,	¼ pint.
Extract of neroli,	½ pint.
" vanilla,	¼ pint.
" vitivert,	¼ pint.
" cassie,	½ pint.
" ambergris,	¼ pint.

ECONOMICAL SCENTS.

As cheap perfumes are often required to fill little fancy bottles, such as are sold at the bazaars, toyshops, arcades, wheels of Fortune, and other places, the following recipes for their manufacture will be found of service.

1.

Spirit of wine,	1 pint.
Essence bergamot,	1 ounce.

2.

Spirit of wine,	1 pint.
Otto of santal,	1 ounce.

3.

Spirit of wine,	1 pint.
Otto French lavender,	½ ounce.
" bergamot,	½ ounce.
" cloves,	1 drachm.

4.

Spirit of wine,	1 pint.
Otto lemon-grass,	¼ ounce.
Essence lemons,	½ ounce.

5.

Spirit of wine,	1 pint.
Otto petit grain,	¼ ounce.
" orange-peel,	½ ounce.

Nearly all these mixtures will require to be filtered through blotting-paper, with the addition of a little magnesia, to make them bright. What these scents are to be named, we must leave to abler nomenclaturists.

The processes described for procuring the odors of plants are those now in use by the perfumer: future ages will doubtless witness many improvements, although the methods now adopted appear almost perfect. The most marked invention, as a means of winning the odors, of recent date, is that of M. Pivers, which is very ingenious, and, although faulty, will probably lead up to something useful and practical. M. Pivers' may be termed the Pneumatic Process, since it consists of forcing a current of air into a vessel filled with fresh flowers, and then passed into a second vessel containing grease, which is kept fluid and in which revolve disc plates; the air thus charged with odor from the flowers passes over the grease, and there yields up its scent. The apparatus is so contrived that the same air repeatedly passes through the same vessel.

By this process a new product has also been obtained, for when the air, having passed over the flowers, is received into a condensing vessel, an intensely odorous water is procured, having the fragrance of the flowers employed in a remarkable degree.

M. Millon, a French chemist, some few years past, patented a process of extracting odors of flowers by means of ether and sulphide of carbon: he places the flowers in a percolator, and passes the solvent fluid over them; the liquid which comes away contains the odorous body, together with a considerable portion of wax; on distilling the liquid, the odorous body mixed with the wax remains, being less volatile than either the sulphide of carbon or ether. These products are interesting in a chemical sense, but are of little avail at present to the practical perfumer.

We have now described all the important odoriferous bodies which are used by the manufacturing perfumer, as derived from the botanic kingdom; it may be understood, that where an odoriferous material is unnoticed, it has no qualities peculiar enough to be remarked on, and that the methods adopted for preparing its essence, extract, water, or oil, are analogous to those that have been already noticed—that is, by the processes of

Maceration, *absorption*, or *enfleurage*, for flowers,
By *tincturation*, for roots, and
By *distillation*, for seeds,
modified under certain circumstances.

There are, however, four other important derivative odors—ambergris, civet, castor, and musk—which, being from the animal kingdom, are treated separately from plant odors, in order, it is considered, to render the whole matter easier for reference to manufacturers who may refer to them. Ammonia and acetic acid, holding an indefinite position in the order we have laid down, may also come in here without much criticism, being considered as primitive odors.

On terminating our remarks relating to the simple preparations of the odors of plants, and before we speak of perfumes of an animal origin, or of those compound *odors* sold as bouquets, nosegays, &c., it may probably be interesting to give a few facts and statistics showing the consumption, in England, of the several substances previously named.

The Commercial Elements of Perfumery.

Quantities of Essential Oils or Ottos, paying 1*s. per pound Duty, entered for Home Consumption in the Year* 1852.

	lbs.
Otto of bergamot,	28,574
“ caraway,	3,602
“ cassia,	6,163
“ cloves,	595
“ lavender,	12,776
“ lemon,	67,348
“ peppermint,	16,059
“ roses,	1,268
“ spearmint,	163
“ thyme,	11,418
“ lemon grass,	47,380
“ citronella,	
And other ottos not otherwise described,	
Total essential oils, or ottos, imported in one year,	195,346

at the duty of 1*s*. per pound, yield a revenue annually of £9766 16*s*.

It would appear by the above return that our consumption of otto of cloves was exceedingly small, whereas it is probably ten times that amount. The fact is, several of the English wholesale druggists are very large distillers of this otto, leaving little or no room for the sale and importation of foreign distilled otto of cloves. Again, otto of caraway: the English production of that article is quite equal to the foreign; also, otto of lavender, which is drawn in this country probably to the extent of 6000 lbs. annually.

There were also passed through the Custom House for home consumption, in 1852—

Pomatums, procured by enfleurage, maceration, &c., commonly called "French Pomatums," average value of 6*s.* per pound, and paying a duty of 1*s.* per pound, valued by the importers at	£1,306
Perfumery not otherwise described; value, . .	1,920
Number of bottles of eau de Cologne, paying a duty of 1*s.* each,*	19,777

Revenue from eau de Cologne manufactured out of England, say 20,000 flacons at 8*d.*=£8000 annually.

The total revenue derived from various sources, even upon this low scale of duties, from the substances with which "Britannia perfumes her pocket handkerchief," cannot be estimated at less than £40,000 per annum. This, of course, includes the duty upon the spirits used in the home manufacture of perfumery. Previously to 1832, the duty on musk in England was 5*s.* an ounce; in 1842, the duty of 6*d.* an ounce produced £53, showing that 2120 ounces had been entered for consumption. In 1846 it was declared free of duty. The import now, 1856, is over 3000 ounces.

Levying an excise duty upon odorous substances is not peculiar to England, for it was practised during the Roman Empire. Gibbon says, "There is still extant a long but imperfect catalogue of Eastern commodities, which, about the time of Alexander Severus, were subject to the payment of duties—cinnamon, myrrh, and a whole tribe of aromatics."

---

* The duty on eau de Cologne is now, according to the last tariff, 8*d.* per flacon of 4 oz., or 20*s.* per gallon.

SECTION VI.

PERFUMES OF ANIMAL ORIGIN.

In the previous articles we have only spoken of the odors of plants; we now enter upon those materials used in perfumery of an animal origin. The first under our notice is—

Ambergris.—This substance is found in the sea, floating near the islands of Sumatra, Molucca, and Madagascar; also on the coasts of America, Brazil, China, Japan, and the Coromandel. The western coast of Ireland is often found to yield large pieces of this substance. The shores of the counties of Sligo, Mayo, Kerry, and the Isle of Arran, are the principal places where it has been found. In the "Philosophical Transactions" there is an account of a lump found on the beach of the first-mentioned county, in the year 1691, which weighed 52 oz., and was bought on the spot for £20, but which afterwards was sold in London for more than £100 ("Philos. Trans.," No. 227, p. 509). We are quite within limit in stating that many volumes concerning the origin of ambergris have been written, but the question respecting it is still at issue. It is found in the stomachs of the most voracious fishes, these animals swallowing, at particular times, everything they happen to meet with. It has been particularly found in the intestines of the spermaceti whale, and most commonly in sickly fish, whence it is supposed to be the cause or effect of disease.

Some authors, and among them Robert Boyle, consider it to be of vegetable production, and analogous to amber; hence its name amber-*gris* (gray) gray amber. It is not, however, within the province of this work to discuss the various theories about its production, which could probably be satisfactorily explained if our modern appliances were brought to bear upon the subject. The field is open to any scientific enthusiast,—all recent authors who mention it, merely quoting the facts known more than a century ago, nay more, for in the sixth voyage of Sindbad the Sailor, he says:

> Instead of taking my way to the Persian Gulf, I travelled once more through several provinces of Persia and the Indies, and arrived at a seaport, where I embarked on board a ship, the captain of which was resolved on a long voyage.

Shortly after they were wrecked, and then describing the place, Sindbad says:

> Here is also a fountain of pitch and bitumen,* that runs into the sea, which the fishes swallow, and then vomit it up again, turned into *ambergris!*

Captain Buckland considers ambergris to be nothing more or less than the fæces of the whale, and from numerous observations of ambergris I think I can inductively substantiate this fact.

---

* No doubt the writer was wrecked somewhere on the coast of the province of Pegu, near Rangoon, where there are natural petroleum springs to this day; and it is something to say of science that in our time beautiful white wax-like, or true paraffine candles are made from this Rangoon tar, but which, in Sindbad's time, "was swallowed by fishes and turned into ambergris!"

It is known that the ambergris whale feeds upon the cuttle fish. The snout of this creature is armed with a sharp-pointed curved black horn, exceedingly hard, tough, and indestructible.

On breaking up good specimens of ambergris I invariably find perfect specimens of this beak, which appear to have escaped or to be incapable of digestion, and are thus excreted together with biliary matter.

It is said by Dr. Ure that the Chinese try the genuineness of ambergris by scraping it fine upon boiling tea: it should dissolve and diffuse itself generally. Dr. Thudichum is at work on ambergris; we may expect therefore shortly to be in possession of all the chemical qualities of this curious substance.

A modern compiler, speaking of ambergris, says, "It smells like dried cow-dung." Never having smelled this substance, we cannot say whether the simile be correct; but we certainly consider that its perfume is most incredibly overrated; nor can we forget that Homberg found that "a vessel in which he had made a long digestion of the human fæces had acquired a very strong and perfect smell of ambergris, insomuch that any one would have thought that a great quantity of essence of ambergris had been made in it. The perfume (*odor?*) was so strong that the vessel was obliged to be moved out of the laboratory." (Mem. Acad. Paris, 1711.)

Nevertheless, as ambergris is extensively used as a perfume, in deference to those who admire its odor, we presume that it has to many an agreeable smell.

Like bodies of this kind undergoing a slow decomposition, and possessing little volatility, it, when mixed with other very fleeting scents, gives permanence to them on the handkerchief, and for this quality the perfumer esteems it much.

Essence of Ambergris.

Spirit,	1 gallon.
Ambergris,	3 oz.

Let it stand for a month.

It is only kept for mixing; when retailed, it has to be sweetened up to the public nose; it is then called, after the Parisian name,

Extrait d'Ambre.

Esprit de rose triple,	½ pint.
Extract of ambergris,	1 pint.
Essence of musk,	¼ pint.
Extract of vanilla,	2 ounces.

This perfume has such a lasting odor, that a handkerchief being well perfumed with it, will still retain an odor even after it has been washed.

The fact is, that both musk and ambergris contain a substance which clings pertinaciously to woven fabrics, and not being soluble in weak alkaline lyes, is still found upon the material after passing through the lavatory ordeal.

Powdered ambergris is used in the manufacture of cassolettes—little ivory or bone boxes perforated—which are made to contain a paste of strong-smelling substances, to carry in the pocket or reticule; also in the making of peau d'Espagne, or Spanish skin, used for perfuming writing-paper and envelopes, and which will be described hereafter.

Civet.—This substance is secreted by the *Viverra*

Civetta, or civet cat. It is formed in a large double glandular receptacle between the anus and the pudendum of the creature. Like many other substances of Oriental origin, it was first brought to this country by the Dutch.

The Dutch used to keep numbers of civets alive at Amsterdam, for the purpose of collecting the perfume when secreted. When a sufficient time had been allowed for the process, the animal was put into a long wooden cage, so narrow that it could not turn itself round. The cage being opened by a door behind, a small spatula, or spoon, was introduced through the orifice of the pouch, which was carefully scraped, and its contents put into a vessel. This operation was performed twice or thrice a week; about a drachm at a time is thus obtained, and the animal was said to produce more civet when irritated. The quantity depended chiefly on the quality of the nourishment it took, and the appetite with which it ate. In confinement its favorite food was boiled meat, eggs, birds, and small animals, and particularly fish.

Civet Cat.

A good deal of the civet now brought to European markets is from Calicut, capital of the province of Malabar, and from Bassora on the Euphrates, and from Abyssinia, where the animal is reared with much tenderness. A living specimen may be seen at the Zoological Gardens, Regent's Park.

Civet must have been used in England in Shakspeare's time, for he mentions it, as also musk, in several plays.

> "Give me an ounce of civet."—*Lear*, iv, 6.
> "He rubs himself with civet."—*Much Ado*, iii, 2.
> "Hands are perfumed with civet."—*As You Like It*, iii, 2.

In its pure state, civet has, to nearly all persons, a most disgusting odor. Massinger makes one of his characters say—

> "Lady, I would descend to kiss thy hand,
> But that 'tis gloved,* and civet makes me sick."

---

* Such observations as the following occur not unfrequently in Nichols's "Royal Progresses:" "Three Italians came unto the queen, and presented her each with a pair of sweet gloves."

Edward de Vere, Earl of Oxford, the first person who brought embroidered gloves into England, presented a pair to the queen, who took such pleasure in the gift, that she was pictured with them in her hand. The "embroidered" and "sweet" gloves here referred to had been recently introduced into this country from Spain and Venice, which excelled all other seats of the trade in the delicacy of their productions, and likewise imparted to them the additional charm of a fragrant scent. But the perfumed glove has ever had an evil reputation, from the circumstance that it was not unfrequently used as an agent in the conveyance of poison. The Queen of Navarre, having received a pair from the court of France, and accepted them as a pledge of safe conduct, met her death by their means—a fate which is also supposed to have befallen the beautiful Gabrielle d'Estrées. The modern French manufacturers, taking a hint from the former practice of continental craftsmen, were in the habit very recently of attempting to impart a fragrance to some of their gloves;

But when diluted to an infinitesimal portion, its perfume is agreeable. It is difficult to ascertain the reason why the same substance, modified only by the quantity of matter presented to the nose, should produce an opposite effect on the olfactory nerve; but such is the case with nearly all odorous bodies, especially with ottos, which, if smelled at, are far from nice, and in some cases positively nasty—such as otto of neroli, otto of thyme, otto of patchouly; but if diluted with a thousand times its volume of oil, spirit, &c., then their fragrance is delightful.

Otto of rose to many has a sickly odor, but when eliminated in the homœopathic quantities which rise from a single rose-bloom, who is it that will not admit that "the rose is sweet?" The odor of civet is best imparted, not by actual contact, but by being placed in the neighborhood of absorbent materials. Thus, when spread upon leather, and placed in a writing-desk, it perfumes the paper and envelopes delightfully, so much so that they retain the odor after passing through the post. "Valentines" are thus scented.

Extract of Civet is prepared by rubbing in a mortar, one ounce of civet with an ounce of orris-root powder, or any other similar material that will assist to break up or divide the civet; and then placing the whole into a gallon of rectified spirits; after macerating for a month, it is fit to strain off. It is principally used as a "fixing" ingredient, in mixing es-

---

but failing in the abstruse chemical knowledge which distinguished the Italians, they used a preparation of myrtle leaves, that quickly evaporated on exposure to the air.—*Chambers's Journal.*

sences of delicate odor. The French perfumers use the extract of civet more than the English manufacturers, who seem to prefer extract of musk. From a quarter of a pint to half a pint is the utmost that ought to be mixed with a gallon of any other perfume.

CASTOR.—This is a secretion of the *Castor Fiber*, or Beaver, very similar in many of its characters to civet, though in odor quite dissimilar. So long as perfumers can obtain musk or civet, they are not likely to employ castor, but, nevertheless, it has qualities that recommend it in some instances, especially that on the score of economy.

Castor is imported from Canada and the territories of the Hudson's Bay Company. It is contained in small pear-shaped membranous sacs, generally hard and brittle in this country, but is said to be soft and pasty when taken from the animal.

In a dry state castor has but little odor (in this respect resembles ambergris), but when infused in spirit its scent is developed in a remarkable degree.

Two ounces of castor in one gallon of spirit will make a standard extract; but, like musk and civet, if more than a quarter of a pint of this extract be mixed with a gallon of any other scent, its characteristic odor becomes evident above the others. Perfumes containing it last well on the handkerchief, but there are very few persons that consider it nice.

MUSK.

"So sweetly, all musk."—*Merry Wives*, ii, 2.

This extraordinary substance, like civet, is an animal secretion; it is contained in excretory follicles about the navel of the male animal. In the perfumery trade these little bags are called "pods," and as imported it is called "pod musk." When the musk is separated from the skin or sac in which it is contained it is then called "grain musk."

Musk-pod, actual size.

The musk-deer (*Moschus moschatus*) is an inhabitant of the great mountain range which belts the north of India, and branches out into Siberia, Thibet, and China. It is also found in the Altaic range, near Lake Baikal, and in some other mountain ranges, but always on the borders of the line of perpetual snow. It is from the male animal only that the musk is obtained.

It formerly was held in high repute as a medicine, and is still so among Eastern nations. It will be remembered that the newspaper paragraphs told us that the last dose which the Emperor Nicholas of Russia swallowed before his death was a potion of musk. The musk from Boutan, Tonquin, and Thibet, is most esteemed; that from Bengal is inferior, and from Russia is of still lower quality. The strength and the quantity produced by a single animal varies with the season of the year and the age of the animal. A single musk-pod usually contains from two to three drachms of grain musk. Musk is imported into England from China, in caddies of from 50 to 100 ounces each. When adulterated with the animal's blood, which is often the case, it forms into lumps or clots; it is sometimes also mixed with a dark, friable earth. Those pods in which little pieces of lead are discovered, as a general rule, yield the finest quality of musk; upon the idea, we presume, that the best musk is the most worthy of adulteration. Musk is remarkable for the diffusiveness and subtlety of its scent; everything in its vicinity soon becomes affected by it and long retains its odor, although not in actual contact with it. For this reason the late Hon. East India Company ordered that no musk be brought in the same ship with tea.

THE MUSK DEER.

This little persecuted animal would probably have been left undisturbed to pass a life of peace and quietness in its native forests, but for the celebrated perfume with which nature has provided it. Its skin being worthless from its small size, the flesh alone would hold out no inducement for the villagers to hunt it while larger game was more easily procurable, and its comparative insignificance would alike have protected it from the pursuit of the European sportsman. As the musk, however, renders it to the Puharries the most valuable of all, no animal is so universally sought after in every place it is known to inhabit. Musk is in demand in nearly every part of the civilized world, yet little, I believe, is known of the nature and habits of the animal that produces it.

The musk-deer is rather more than three feet long, and stands nearly two high at the shoulder; but they vary considerably in size, those found in thick shady woods being invariably larger than those on rocky open ground. The head is small, the ears long and erect. The male has a tusk depending from each upper jaw, which, in a full-grown animal, is about three inches long, the thickness of a goose-quill, sharp-pointed, and curving slightly backwards. The general color is a dark speckled brownish-gray, deepening to nearly black on the hind-quarters, where it is edged down the inside of the thighs with reddish-yellow. The throat, belly, and legs are of a lighter gray. Legs long and slender; toes long and pointed; the hind heels are long, and rest on the ground as well as the toes. The fur is composed of thick spiral hairs, not unlike miniature porcupine-quills; they are very brittle, breaking with a slight pull, and so thickly set, that numbers may be pulled out without altering the outward appearance of the fur. It is white from the roots to nearly the tips, where it gradually becomes dark. The fur is much longer and thicker on the hind parts than the fore, and gives the animal the appearance of being much larger in the hind-quarters than the shoulder. The tail, which is not seen unless the fur is parted, is an inch long, and about the thickness of a thumb; in females and young animals it is covered with hair, but in adult males is quite naked, except a slight tuft at the end; and often covered, as well as all the parts near it, with a yellowish waxy substance.

The musk, which is much better known than the deer itself, is only found in adult males; the females have none, neither has any portion of their bodies the slightest odor of musk. The dung of the males smells nearly as strong as musk, but, singularly enough, neither in the contents of the stomach, nor bladder, nor in any other part of the body, is there any perceptible scent of musk. The pod, which is placed near the navel, and between the flesh and the skin, is composed of several layers of thin skin, in which the musk is confined, and has much the appearance of the craw or stomach of a partridge, or other small gallinaceous bird, when full of food. There is an orifice outwards through the skin, into which, by a slight pressure, the little finger will pass, but it has no connection whatever with the body. It is probable that musk is at times discharged through this orifice, as the pod is often found not half full, and sometimes nearly void.*

---

* From this orifice the dealers extract the grain musk, and then insert in its place the pieces of lead, brass, copper, skin, dried blood, clay, and other adulterations generally found in the pods when opened in England, and from the size of these orifices it can be pretty fairly judged how the pods have been tampered with.—S. P.

The musk itself is in grains, from the size of a small bullet to small shot, of irregular shape, but generally round or oblong, together with more or less in coarse powder. When fresh it is of a dark reddish-brown color, but, when taken out of the pod and kept for any length of time, becomes nearly black. In autumn and winter the grains are firm, hard, and nearly dry, but in summer they become damp and soft, probably from the green food the animals then eat. It is formed with the animal, as the pod of a young one, taken out of the womb, is plainly distinguishable, and indeed is much larger in proportion than in grown-up animals. For two years the contents of the pod remain a soft milky substance, with a disagreeable smell. When it first becomes musk there is not much more than the eighth of an ounce; as the animal grows it increases in quantity, and in some individuals as much as two ounces is found. An ounce may be considered as the average from a full-grown animal; but as many of the deer are killed young, the pods in the market do not perhaps contain, on an average, more than half an ounce. Though not so strong, the musk of young animals has a much pleasanter smell than that of old ones; but difference of food, climate, or situation, as far as my experience goes, does not at all affect the quality.

From the first high ridge above the plains, to the limits of forest on the snowy range, and for perhaps the whole length of the chain of the Himalayas, the musk-deer may be found upon every hill of an elevation above 8000 feet, which is clothed with forest. On the lower ranges it is comparatively a rare animal, being confined to near the summits of the highest hills, as we approach the colder forests near the snow; but it is nowhere particularly numerous; and its retired and solitary habits make it appear still more rare than it really is. Exclusively a forest animal, it inhabits all kinds of forest indiscriminately, from the oaks of the lower hills to the stunted bushes near the limits of vegetation. If we may judge from their numbers, the preference seems to be given to the birch forests, where the underwood consists chiefly of the white rhododendron and juniper.

In many respects they are not unlike hares in habits and economy. Each individual selects some particular spot for its favorite retreat, about which it remains still and at rest throughout the day, leaving it in the evening to search for food, or to wander about, returning soon after daylight. They will occasionally rest for the day in any place where they may happen to be in the morning, but in general they return to near the same spot almost every day, making forms in different quarters of their retreat a little distance from each other, and visiting them in turn. Sometimes they will lie under the same tree or bush for weeks together. They make forms in the same manner as hares, levelling with their feet a spot large enough for the purpose if the ground is too sloping. They seldom, if ever, lie in the sun, even in the coldest weather, and their forms are always made where there is something to shelter them from its rays. Towards evening they begin to move, and during the night appear to wander about a good deal, from top to bottom of the hill, or from one side to another. In the day they are seldom seen moving about. Their nocturnal rambles are apparently as much for recreation as in search of food, as they often visit regularly some steep ledge of rock or precipice, where there is little or no vegetation. The Puharries believe that they come to such places to play and dance with each other, and often set their snares along the edge of such a ledge or precipice, in preference to the forest.

If not walking leisurely and slowly along, the musk-deer always goes in bounds, all fours leaving and alighting on the ground together. When at full speed, these bounds are sometimes astonishing for so small an animal. On a gentle slope I have seen them clear a space of more than sixty feet at a single bound, for several successive leaps, and spring over bushes of considerable height at the same time. They are very sure-footed, and although a forest animal, in travelling over rocky and precipitous ground, have perhaps no equal. Where even the burrell is obliged to move slowly and carefully, the musk-deer bounds quickly and fearlessly; and although I have often driven them on to rocks which I thought it impossible they could cross, they have invariably found a way in some direction, and I never knew an instance of one missing its footing, or falling, unless wounded.

They eat but little compared with other ruminating animals; at least one would imagine so from the small quantity found in their stomachs, the contents of which are always in such a pulpy state that it is impossible to tell what food they prefer. I have often shot them whilst feeding, and found in the mouth or throat various kinds of shrubs or grasses, and often the long white moss that hangs so luxuriantly from the trees in the higher forests. Roots also seem to form a portion of their food, as they scratch holes in the ground, like many of the hill pheasants. The Puharries believe that the males kill and eat snakes, and feed upon the leaves of the "kedar patta," a small and very fragrant-smelling laurel, and that the musk is produced by this food. They may probably eat the leaf of this laurel amongst other shrubs, but from the few occasions upon which I have seen this laurel stripped of any portion of its leaves, it does not appear to afford a very favorite repast. Their killing snakes is doubtless quite fabulous.

The young are born either in June or July, and almost every female brings forth yearly, and often twins. These are always deposited in separate places some distance from each other, the dam herself keeping apart from both, and only visiting to give them suck. Should a young one be caught, its bleating will sometimes bring the old one to the spot, but I never knew an instance of one being seen abroad with its dam, or of two young ones being seen together. Their solitary habits are innate, for if a fawn is taken young and suckled by a sheep or goat, it will not for some time associate with its foster-dam, but, as soon as satisfied with sucking, seeks some spot for concealment. It is amusing to see them suck; all the while they keep leaping up and crossing their fore-legs rapidly over each other. They are rather difficult to rear, as many, soon after they are caught, go blind and die.

In most of the hill-states the musk-deer is considered as royal property. In some, the Rajahs keep men purposely to hunt it; and in Gurwhal a fine is imposed upon any Puharrie who is known to have sold a musk-pod to a stranger—the Rajah receiving them in lieu of rent.

In some districts they are hunted down with dogs, but snaring is by far the most common method practised for their capture. A few are occasionally shot by the village shikaries when in pursuit of other animals, but the matchlock is seldom taken out purposely to hunt musk-deer, for a hill shikarie does not carry the match lighted, and the deer being generally come upon face to face, almost every one would get away before he could strike a light and apply it to the match. In snaring, a fence about three feet high, composed of bushes and branches of trees, is made in the forest, generally along some ridges, and often upwards of a mile in length. Openings for the deer to pass through are left every ten or fifteen yards, and in each a strong hempen snare is placed, tied to a long stick, the thick end of which is firmly fixed in the ground, and the smaller, to which the snare is fastened, bent forward to the opening, so that the deer, when passing through, treads upon some small sticks which hold it down, the catch is set free, the stick springs back and tightens the snare round the animal's leg. Besides the musk-deer, numbers of the forest pheasants, moonals, corklass, and argus are caught in these snares; they are visited every third or fourth day, and it is seldom that the owners return without something or other. The polecats often find out the snares, and, after once tasting the feast, if not destroyed, soon become a terrible annoyance, tracing the fence almost daily from end to end, and seizing on everything caught; they are often caught themselves, but immediately bite the snare in two and escape. Musk-deer are frequently lost to the snarers in this manner, for when one is eaten by the polecats, the pod is torn to pieces, and the contents scattered on the ground. No animal swallows the musk, and when a deer has been killed and eaten by a leopard or other animal, if the ground be carefully examined, much of the musk may be picked up. Insects and maggots also leave it untouched.* I once found what I thought was a newly killed musk-deer, but on examination I discovered it was merely the skin and skeleton of one, which from its dry and withered state must have been dead some months; the flesh had been completely eaten away by maggots, but the musk-pod was entire.

The musk-pods which reach the market through the hands of the native hunters are generally inclosed in a portion of the skin of the animal, with the hair or fur left on it. When they have killed a musk-deer, they cut round the pod, and skin the whole of the belly. The pod comes off attached to the skin, which is then laid with its fleshy side on a flat stone previously heated in the fire, and thus dried without singeing the hair. The skin shrinks up from the heat into a small compass, and is then tied or stitched round the pod, and hung up in a dry place until quite hard. This is the general method of preparing them, but some put the pod into hot oil instead of laying it on a hot stone, but either method must deteriorate the quality of the musk, as it gets either completely baked or fried. It is best, both in appearance and smell, if the pod is at once cut from the skin, and allowed to dry of itself.

---

* Having to do with musk for more than twenty-five years, I never but once saw a living thing in it; however, in May, 1861, I purchased six caddies of musk; they were examined and appeared to be all right: in the following August, on opening one of these caddies, I was surprised to find every pod of musk perforated with maggot-holes, and on opening the pods, white maggots, all alive and fat, were found in endless numbers enjoying their banquet—a food which had cost me 50*s*. an ounce. As the creature was new to me, I called it *the Musk Grub*.—S. P.

The musk received from the Puharries is greatly adulterated, and pods are often made altogether counterfeit; and as they are generally sold without being cut open, it is scarcely possible to detect the imposture at the time. I have often seen pods offered for sale which were merely a piece of musk-deer skin filled with some substance, and tied up to resemble a musk-pod, with a little musk rubbed over to make it smell. These are easy to detect, from there being no navel on the skin, it being cut from any part of the body. But the musk is sometimes taken out of real pods, and its place supplied by some other substance, and these are difficult to detect even if cut open, as whatever is put in is made to resemble musk in appearance, and a little genuine added makes it smell nearly as strong. Some have only a portion of the musk taken out, and its place thus supplied; and others have all the musk left in, but something added to increase the weight. Even in the hills where it is produced, so little do the generality of the people know of musk, that I have often seen the Puharries about Gangoutrie sell to pilgrims, to men from the lower hills, and even to their own neighbors, small portions of what they called musk, but what was merely some substance resembling it, with a little genuine musk scattered over it. Of this stuff they would sell about a quarter of a tolah for a rupee, or about twenty shillings an ounce.

The substances commonly used for adulteration or to fill the counterfeit pods, are blood, boiled or baked on the fire, then dried, beaten to powder, kneaded into a paste, and made into grains and coarse powder to resemble genuine musk; a piece of the liver or spleen prepared in the same manner; dried gall, and a particular part of the bark of the apricot-tree, pounded and kneaded as above. The dried paste from which common oil has been extracted, called "peena," is also used, and lumps of this are often, without further preparation, thrust into a pod through the orifice in the skin, to increase the weight. Sometimes no care is taken to give the material employed in filling a counterfeit pod even the appearance of musk. A gentleman once showed me a pod he had bought from a Puharrie at Missourie: on my telling him it was counterfeit, he cut it open, and found it filled with hookah tobacco.*

---

* Col. Fred. Markham's (C. B.) Journal of Sporting Adventures and Travel in Chinese Tartary and Thibet.

My friend Mr. F. Peake, of the firm Peake, Allen & Co., of Umballa, and Albion Place, London, whose long residence in the north of India has given him, for a European, unusual opportunities of ascertaining facts relating to the Musk-deer, has recently sent a stuffed specimen of the animal to the Museum of the Pharmaceutical Society. He also read the following paper before a meeting of that body, and which he has kindly permitted me to reproduce, together with a sketch of the animal.

The specimen probably will serve to clear up many points relative to the quality and appearance of musk, and to explain the difference and cause of there being so many varieties and qualities in the market.

The deer is about the size of a greyhound, and, from the length of its tusks, it is no doubt five or six years of age, or perhaps more. Its brown stubby coat more resembles small porcupine quills than hair, and every part of the animal has a strong odor of musk. The head, legs, feet, and general outline, are those of the common deer; but in its habits it more resembles the hare, selecting a solitary place or form separate from its species. It is sometimes found in the lower ranges of the mountains, at an elevation of 7000 to 8000 feet. It is an inhabitant of the forest, but partial to woody ravines, and is common only on the spurs or projecting points jutting from the eternal snowy ranges, at an altitude of from 10,000 to 14,000 feet.

The natives take the musk-deer by snaring, but this specimen was, it is believed, shot by the rifle. On being approached, they bound off with great rapidity, and when at about eighty to one hundred yards, turn round for a few seconds to gaze on their disturber with their faces towards him; at this instant the unerring aim is taken, but the prize is not always secured, as sometimes it falls down precipices where it cannot be reached. Days and days are frequently lost without falling in with any, and, on an average, upwards of thirty miles are traversed daily.

The toil of getting up and down these immense mountains is very great, and the pursuit is attended with many hardships and privations. The time expended and distance traversed render the occupation very expensive, from the necessity of being accompanied by various grades of servants, some to hunt up and look out for game, others to carry provisions, cooking utensils, &c.; consequently, genuine musk must always maintain a high rate.

It will be seen that there is a thin membrane under the outer skin of the abdomen, of a small bladder-like appearance, containing a thickish soft substance, which is the musk. The musk in each membranous pod usually weighs from two drachms to an ounce; from an old deer, from one ounce and a half to two ounces; and its odor increases in proportion to the age of the animal. The male only furnishes the musk; at the age of twelve months and under it does not yield any, and it is only at three years that the pod contains sufficient to be worth the trouble of extracting. The practised eye can generally judge if it be a young one—if so, it is allowed to escape. At two years the pod contains a yellowish milky substance, and, when first changed to musk, it yields not more than two drachms, frequently less.

A few extracts from our Himalayan correspondent's letter may more clearly illustrate its character:

"One or two parcels I have sent to London have had a preference in the market even to the best Assam. About sending it in pods with the hair on? I will do so if you like, but I would not recommend it, as my musk is genuine just as it is taken from the animal. The thin bladder-like skin dries in the sun in a few hours—that in the hairy pods, on the contrary, gets quite roasted in the process of preserving and preparing.

"The native plan is to make a stone nearly red-hot, and the pod is first applied to it inwardly and outwardly till the skin is nearly dry, when it is stitched up, and the navel side is then held to the stone, pressing it and closing it with considerable force till the pod is quite dry. If this was not done, putrefaction would ensue, which, though only of the skin, would not improve the musk.

"I sent both kinds home, to ascertain which was best, and that in the pods without the hairy skin was declared to be far superior. All came from the same place, and from animals killed the same season."

In a letter of a former year he states:

"I send you an account of the season's produce, viz., 120 pods, which weigh about 110 to 120 ounces or more, as they are large. The small ones being nearly all skin, I thought it advisable to let the natives have them to dress in their way and to sell to natives."

The musk pod familiar to us all is this membranous bladder, cut from the deer with a portion of the outer skin; it is pressed and stitched up, and dried on a hot stone. By this continued heat much of its odor is driven off, and it is consequently deprived of its qualities as a remedial agent, and for the use of the perfumer greatly deteriorated. A large quantity of musk collected by natives, which is invariably falsified, finds its way to this and other countries. They cut the young pods, containing no musk at all as before mentioned, and fill them with the liver and blood of the animal, mixed with this yellow fluid and a small portion of genuine musk, fill, and sew them up in the skin, and dry on the hot stove; or those which yield half a drachm to a drachm they mix and dry in like manner.

At one of the Government sales in India of presents given by native princes, there were many pods of musk, to appearance very fine, which proved to be nearly worthless; they had evidently been "made up," and from long keeping the little real musk they contained had considerably evaporated.

It would be a difficult matter for a native to resist the temptation of not making some addition even to the finest pods, or of extracting a portion and filling it up with the mixture of blood and liver.

The interior of the Himalayas where the supply is obtained is towards Ladâk, Thibet, and Chinese Tartary, and, as these mountains extend over so many thousand miles, it is probable that the musks known as China, Nepaul, and other musks, and perhaps some Russian, are from the same districts. The Tartar tribes wander from place to place, bartering with the natives of these several countries who have access to these regions. Hence the musk would be from the same species, the difference in appearance being caused by its varying age and mode of preparing and drying.

The genuineness of musk depends on the honesty of the natives and others who procure and dispose of it to the various markets.

The musk in the membranous bladder yields nearly double the quantity of grain musk to an equal weight of musk with the skin and hair.

It is a fashion of the present day for people to say that "they do not like musk;" but, nevertheless, from great experience in one of the largest manufacturing perfumatories in Europe, I am of opinion that the public taste for musk is as great as any perfumer desires. Those substances containing it always take the preference in ready sale—so long as the vendor takes care to assure his customer "that there is no musk in it."

The Empress Josephine was very fond of perfume, and, above all, of musk. Her dressing-room was filled with it, in spite of Napoleon's frequent remonstrances. Forty years have elapsed since her death, and the present owner of Malmaison has had the walls of that dressing-room repeatedly washed and painted, but neither scrubbing, aquafortis, nor paint, has been able to remove the smell of the good Empress's musk, which continues as strong as if the bottle which contained it had been but yesterday removed.

The perfumer uses musk principally in the scenting of soap, sachet-powder, and in mixing for liquid perfumery. The just reputation of Paris's original Windsor soap is due, in the main, to its delightful odor. The soap is, doubtless, of the finest quality, but its perfume stamps it among the *élite*—its fragrance it owes to musk.

The alkaline reaction of soap is favorable to the development of the odoriferous principle of musk. If, however, a strong solution of potass be poured on to grain musk, ammonia is developed instead of the true musk smell.

There are three kinds of musk common in the London market. The CABARDIEN or RUSSIAN MUSK, which is rarely, if ever, adulterated; from its poor fragrance, however, it does not fetch more than 8*s.* an ounce in the pod. The ASSAM MUSK is next in quality; it is very strong, but has a rank smell; the pods are very large and irregular in shape; fetches about 24*s.* per ounce in the pod. The TONQUIN or CHINESE MUSK yields the kind mostly prized in England, and is more adulterated than the former; market price, from 26*s.* to 32*s.* per ounce in the pod.

EXTRACT OF MUSK.

Grain musk, ...	2 oz.
Rectified spirit, ...	1 gallon.

After standing for one month, at a summer temperature, it is fit to draw off. Such an extract is that which is used for mixing in other perfumes. That extract of musk which is prepared for retail sale is made thus: and sold under the title of

EXTRAIT DE MUSC.

Extract of musk (as above), ...	1 pint.
" ambergris, ...	½ pint.
" rose triple, ...	¼ pint.

Mix and filter; it is then fit for bottling.

This preparation is sweeter than pure extract of musk made according to our first formula, and is also more profitable to the vendor. It will be seen hereafter that the original extract of musk is principally used for a fixing ingredient in other perfumes, to give permanence to a volatile odor; customers requiring, in a general way, that which is incompatible—namely, that a perfume shall be strong to smell, *i. e.*, very volatile, and that it shall remain upon the handkerchief for a long period, *ergo* not volatile! Small portions of extract of musk, mixed with esprit de rose, violet, tuberose, and others, do, in a measure, attain this object; that is, after the violet, &c., has evaporated, the handkerchief still retains an odor, which, although not that of the original smell, yet gives satisfaction, because it is pleasant to the nasal organ.

SECTION VII.

Ammonia.—Under the various titles of "Smelling Salts," "Preston Salts," "Inexhaustible Salts," "Eau de Luce," "Sal Volatile," ammonia, mixed with other odoriferous bodies, has been very extensively consumed as material for gratifying the olfactory nerve.

The perfumer uses Liq. Amm. fortis—that is, strong liquid ammonia—and the sesquicarbonate of ammonia, for preparing the various "salts" that he sells. These materials he does not attempt to make; in fact, it is quite out of his province so to do, but he procures them ready for his hand through some manufacturing chemist. The best preparation for smelling-bottles is what is termed Inexhaustible Salts, which is prepared thus:

Liquid ammonia,	1 pint.
Otto of rosemary,	1 drachm.
" English lavender,	1 drachm.
" bergamot,	½ drachm.
" cloves,	½ drachm.

Mix the whole together with agitation in a very strong and well-stoppered bottle.

This mixture is used by filling the smelling-bottles with any porous absorbent material, such as asbestos, or, what is better, sponge cuttings that have been well beaten, washed, and dried. These cuttings can be procured at a nominal price from any of the sponge-dealers, being the trimming or roots of the Turkey sponge, which are cut off before the merchants send it into the retail market. After the bottles are filled with the sponge, it is thoroughly saturated with the scented ammonia, but no more is poured in than the sponge will retain when the bottles are inverted; as, if by any chance the ammonia runs out and is spilt over certain colored fabrics, it causes a stain. When such an accident happens, the person who sold it is invariably blamed.

When the sponge is saturated properly, it will retain the ammoniacal odor longer than any other material: hence, we presume, bottles filled in this way are called "inexhaustible," which name, however, they do not sustain more than two or three months with any credit; the warm hand soon dissipates the ammonia under any circumstances, and they require to be refilled.

For transparent colored bottles, instead of sponge, the perfumers use what they call insoluble crystal salts (sulphate of potass). The bottles being filled with crystals, are covered either with the liquid ammonia, scented as above, or with alcoholic ammonia (alcohol saturated with ammoniacal gas). The necks of the bottles are filled with a piece of white cotton; otherwise, when inverted, from the non-absorbent quality of the crystals, the ammonia runs out, and causes complaints to be made. The crystals are prettier in colored bottles than the sponge; but in plain bottles the sponge appears quite as handsome, and, as before observed, it holds the ammonia better than any other material. Perfumers sell also what is called WHITE SMELLING SALTS, and PRESTON SALTS. The White Smelling Salt is the sesquicarbonate of ammonia in powder, with which is mixed any perfuming otto that is thought fit,—lavender otto giving, as a general rule, the most satisfaction.

The contents of a bottle so filled soon lose their pungency, and a nearly inodorous residue remains. Mr. Allchin's plan is first of all to convert the sesquicarbonate into the monocarbonate of ammonia, which is accomplished in the following way: Forty ounces of sesquicarbonate of ammonia are broken into fragments about the size of filberts, and placed in a jar having a well-fitting lid. Into this is afterwards poured twenty ounces of liquor ammonia, sp. gr. 880°. This mixture is frequently stirred for a week, and the jar is then set aside in a cool place for three or four more weeks. If the mixture is not stirred for the first week it sets as hard as a stone; but after stirring, it becomes solid and dry, but can be easily removed from the jar. It is now reduced to a roughish powder, something like salt of tartar, and in that state it is ready for filling the bottles, and improves by keeping. When placed in the bottles some volatile essence or strong ammonia perfumed with essential oils is added. The volatile essence Mr. Allchin uses and recommends is the first given in Dr. Redwood's edition of "Gray's Supplement to the Pharmacopœia," and is as follows:

English oil of lavender and essence of musk, of each,	4 drachms.
Oil of bergamot,	2 drachms.
" cloves,	1 drachm.
Otto of roses,	10 drops.
Oil of cinnamon,	5 drops.
Strongest liquor ammonia,	1 pint.

In the above way, a salt is made which retains its pungency as long as any remains in the bottle. One that had been filled five years was exhibited to a meeting of the Pharmaceutical Society, and, although nearly all the contents had evaporated, what remained still possessed a pungent, agreeable odor.

It was noticed that the salt had become of a brownish color, which was attributed to the action of the oil of cloves contained in the perfume, and it was stated that it would remain colorless if it was omitted.

Preston Salts, which is the cheapest of all the ammoniacal compounds, is composed of some easily decomposable salt of ammonia and lime, such as equal parts of muriate of ammonia, or of sesquicarbonate of ammonia, and of fresh-slaked lime. When the bottles are filled with this compound, rammed in very hard, a drop or two of some cheap otto is poured on the top prior to corking. For this purpose otto of French lavender, or otto of bergamot, answers very well. We need scarcely mention that the corks are dipped into melted sealing-wax, or brushed over with liquid wax, that is, red or black wax dissolved in alcohol, to which a small portion of ether is added. The only other compound of ammonia that is sold in the perfumery trade is eau de luce, though properly it belongs to the druggist. When correctly made—which is very rarely the case—it retains the remarkable odor of oil of amber, which renders it characteristic.

Eau de Luce.

Tincture of benzoin; or, " balsam of Peru,	1 oz.
Otto of lavender,	10 drops.
Oil of amber,	5 drops.
Liquor ammonia,	2 oz.

If requisite, strain through cotton-wool; but it must not be filtered, as it should have the appearance of a milk-white emulsion.

SNUFF.

Though we advocate the proper use of the olfactory sense, yet we repudiate snuff; nevertheless, we cannot allow this work to go to press without pointing out the analogy between the use of scent and the use of snuff. By a singular perversity of human nature, the snuff-takers declare, almost to the majority of one, that they dislike scent: we have, however, only to show that snuff is scent in a high degree, and then leave the reader to decide the question.

Two-thirds of the snuff that is taken owes its fragrance to ammonia, the tobacco-leaf merely serving as a medium to bring the ammonia to the nose. The moist tobacco-leaf certainly imparts a peculiar odor to the snuff that is made from it, but still it is to the ammonia that it owes its peculiar pungency. In this respect, then, we can only compare the snuff-box to the ladies' smelling-bottle; they are both mediums for conveying ammonia, either plain or modified by certain other odorous bodies for the purpose of disguising its real smell, to the olfactory nerve.

The reader will now see our reason for placing snuff in the same section of odoriferous bodies as "smelling salt."

Like every other substance that is capable of being modified by man, there are snuffs in infinite variety.

The plain snuffs are of two kinds: that is, Scotch and rappee. Irish is but a slight modification of Scotch. The Irish and Scotch snuffs are made from the stalks of the tobacco-leaf, which, in truth, otherwise would be a waste product of cigar manufacture. When the tobacco-leaf is being made into cigars, the stalks and fibres are cut out of the leaf, otherwise it would not roll up properly; when these fibres have accumulated sufficiently, the snuff-making process is begun. If the snuff is to become any of the high-dried qualities, then the material has to be sent to an oven, and there dried to that extent required for particular denominations. Lundyfoot is remarkable as being dried almost to the extent of burning, hence this favorite "blackguard" always has a burnt wood smell; after this process it is sent to the snuff-mills, to be ground to titillating dust.

The Irish and common Scotch is made entirely from the. stalk of the tobacco-leaf. The *best* Scotch contains a portion of the leaf mixed with the stalk. The moist snuffs are prepared in another way, thus: After sufficient stalks have accumulated in the manufactory, they are cut up into pieces of about the $\frac{1}{16}$th to $\frac{1}{8}$th of an inch in length, and placed in a large trough, in lots of from one hundredweight to double that quantity. As the material is put in, it is thoroughly moistened with water in which is dissolved, for some varieties, carbonate of ammonia, and for others, muriate of ammonia: in this state it is left to ferment or ripen from about one to two months, according to the weather; in a fortnight or more after this treatment, the material begins to "heat," and it is now that the future aroma, or *flavor* as the makers term it, is decided; for if it becomes too hot, the ammonia is dissipated, and if not hot enough, then the ammoniacal fragrance is not sufficiently developed. It must be observed that tobacco in any form, when moist, and allowed to heat, *produces ammonia* from the elements of its own composition; in this respect it is only like other vegetables containing nitrogenous compounds; the final odor of the snuff depends on the peculiarities of the various tobaccos employed, such as American, Cuban, &c. After the fermentation is complete, the material is sent to the mill to be ground.

"Rappee," which means little leaf, is considered a finer quality of snuff than the former, and is prepared by a similar process; it consists, however, of leaf tobacco, and contains little or no stalk. The ammoniacal smell is much stronger in rappee snuff than in others.

There are, however, several other kinds of snuff, which for their popularity will induce us to claim all who use them—and they are a legion—as patrons of the "Art of Perfumery." These are "Prince's Mixture," which is a rappee scented with otto of rose; and "Queen's Scotch," which is perfumed with bergamot.

The snuff-makers were the first to teach the perfumers to what an extent the fragrance of the Tonquin Bean was admired; even now, if a perfumer makes a mixture containing Tonquin Bean extract in excess, he is charged with making his perfumery smell like snuff.

One of the most delightfully scented snuffs, called "Wallflower," is made by Messrs. G. & S. Goodes of Spitalfields, who seem determined, in spite of public opinion, to bring snuff into fashion, as it was in the reign of Good Queen Anne.

ACETIC ACID AND ITS USE IN PERFUMERY.—The pungency of the odor of vinegar naturally brought it into the earliest use in the art of Perfumery.

The acetic acid evolved by distilling acetate of copper (verdigris) is the true "aromatic" vinegar of the old alchemists.

The modern aromatic vinegar is the concentrated acetic acid aromatized with various ottos, camphor, &c., thus:

AROMATIC VINEGAR.

Concentrated acetic acid,	8 oz.
Otto of English lavender,	2 drachms.
" " rosemary,	1 drachm.
" cloves,	1 drachm.
" camphor,	1 oz.

First dissolve the bruised camphor in the acetic acid, then add the perfumes; after remaining together for a few days, with occasional agitation, it is to be strained, and is then ready for use.

Several forms for the preparation of this substance have been published, almost all of which, however, appear to complicate and mystify a process that is all simplicity.

The most popular article of this kind is

HENRY'S VINEGAR.

Dried leaves of rosemary, rue, wormwood, sage, mint, and lavender flowers, each	½ oz.
Bruised nutmeg, cloves, angelica root, and camphor, each,	¼ oz.
Alcohol (rectified),	4 oz.
Concentrated acetic acid,	16 oz.

Macerate the materials for a day in the spirit; then add the acid, and digest for a week longer, at a temperature of about 14 C. or 15 C. Finally, press out the now aromatized acid, and filter it.

As this mixture must not go into the ordinary metallic tincture press, for the obvious reason of the chemical action that would ensue, it is best to drain as much of the liquor away as we can, by means of a common funnel, and then to save the residue from the interstices of the herbs, by tying them up in a linen cloth, and subjecting them to pressure, by means of an ordinary lemon-squeezer or similar apparatus.

VINAIGRE A LA ROSE.

Concentrated acetic acid, ...	1 oz.
Otto of roses, ...	½ drachm.

Well shaken together.

It is obvious that vinegars differently perfumed may be made in a similar manner to the above, by using other ottos in place of the otto of roses. All these concentrated vinegars are used in the same way as perfumed ammonia—that is, by pouring three or four drachms into an ornamental "smelling" bottle, previously filled with crystals of sulphate of potash, which forms "the sel de vinaigre" of the shops; or upon sponge into little silver boxes, called vinaigrettes, from their French origin. The use of these vinegars had their origin in the presumption of keeping those who carried them from the effects of infectious disease, doubtless springing out of the story of the "four thieves' vinegar," which is thus rendered in Lewis's Dispensatory:

> It is said that during the plague at Marseilles* four persons, by the use of this preservative, attended unhurt multitudes of those that were affected; that, under the color of these services, they robbed both the sick and the dead; and that, being afterwards apprehended, one of them saved himself from the gallows by disclosing the composition of the prophylactic,† which was as follows:

---

* To any one who travels its undrained streets, some of which are but open sewers, the wonder is that there is not always a plague there.

† A very likely story.

VINAIGRES DES QUATRE VOLEURS, OR FOUR THIEVES' VINEGAR.

Take fresh tops of common wormwood, Roman wormwood, rosemary, sage, mint, and rue, of each,	¾ oz.
Lavender flowers,	1 oz.
Garlic, calamus aromaticus, cinnamon, cloves, and nutmeg, each,	1 drachm.
Camphor,	½ oz.
Alcohol, or brandy,	1 oz.
Strong vinegar,	4 pints.

Digest all the materials, except the camphor and spirit, in a closely covered vessel, for a fortnight, at a summer heat; then express and filter the vinaigre produced, and add the camphor previously dissolved in the brandy or spirit.

A very similar and quite as effective a preparation may be made by dissolving the odorous principle of the plants indicated, in a mixture of alcohol and acetic acid. Such preparations, however, are more within the province of the druggist than the perfumer. There are, however, several preparations of vinegar which are sold to some extent for mixing with the water for lavatory purposes and the bath, their vendors endeavoring to place them in competition with eau de Cologne, but with little avail. Among them may be enumerated—

HYGIENIC OR PREVENTIVE VINEGAR.

Brandy,	1 pint.
Otto of cloves,	1 drachm.
" lavender,	1 drachm.
" marjoram,	½ drachm.
Gum benzoin,	1 oz.

Macerate these together for a few hours, then add—

Brown vinegar,	2 pints,

and strain or filter, if requisite to be bright.

TOILET VINEGAR (A LA VIOLETTE).

Extract of cassie,	½ pint.
" orris,	¼ pint.
Esprit de rose, triple,	¼ pint.
White wine vinegar,	2 pints.

TOILET VINEGAR (A LA ROSE).

Dried rose-leaves,	4 oz.
Esprit de rose, triple,	½ pint.
White wine vinegar,	2 pints.

Macerate in a close vessel for a fortnight, then filter and bottle for sale.

VINAIGRE DE COLOGNE.

To eau de Cologne,	1 pint.
Add strong acetic acid,	½ oz.

PIESSE & LUBIN'S COSMETIC VINEGAR.

Spirit,	1 quart.
Gum benzoin,	3 oz.
Concentrated aromatic vinegar,	1 oz.
Balsam Peru,	1 oz.
Otto neroli,	1 drachm.
" nutmeg,	½ drachm.

This is one of the best that is made.

Without unnecessarily repeating similar formulæ, it will be obvious to the reader that vinegar of any flower may be prepared in a similar way to those above noticed; thus, for vinaigre à la jasmin, or for vinaigre à la fleur d'orange, we have only to substitute the esprit de jasmin, or the esprit de fleur d'orange, in place of the eau de Cologne, to produce orange-flower or jasmin vinegars; however, these latter articles are not in demand, and our only reason for explaining how such preparations may be made, is in order to suggest the methods of procedure to any one desirous of making them leading articles in their trade.

We perhaps may observe, *en passant*, that where economy in the production of any of the toilet vinegars is a matter of consideration, they have only to be diluted with rose-water down to the profitable strength required.

Any of the perfumed vinegars that are required to produce opalescence when mixed with water must contain some gum-resin, like the hygienic vinegar, as above. Either myrrh, benzoin, storax, or tolu, answer equally well.

SECTION VIII.

BOUQUETS AND NOSEGAYS.

"See, from bright regions, borne on odorous gales,
The swallow, herald of the summer, sails;
Breathe gentle air! From cherub lips impart
Thy balmy influence to my anguish'd heart;
Thou whose soft voice calls forth the tender blooms,
Whose pencil paints them, and whose breath perfumes;
O may each bud that decks the brow of Spring
Shed all its incense on thy wafting wing."

In the previous articles we have endeavored to explain the mode of preparing the primitive perfumes—the original odors of plants. It will have been observed, that while the majority can be obtained under the form of otto or essential oil, there are others which hitherto have not been isolated, but exist only in solution in alcohol, or in a fatty body. Of the latter are included all that are most prized, with the exception of otto of rose—that diamond among the odoriferous gems. Practically we have no essential oils or ottos of Jasmine, Vanilla, Acacia, Tuberose, Cassie, Syringa, Violets, and others. What we know of these odors is derived from esprits obtained from oils or fats in which the several flowers have been repeatedly infused, and afterwards infusing such fats or oils in alcohol. Undoubtedly, these odors are the most generally pleasing, while those made from the essential oils (*i. e.*, otto) dissolved in spirit are of a secondary character. The simple odors, when isolated, are called Essential Oils, or Ottos; when dissolved or existing in solution in alcohol, by the English they are termed Essences, and by the French, Extraits, or Esprits; a few exceptions prove this rule. Essential oil of orange-peel, and of lemon-peel, are frequently termed in the trade "Essence" of orange and "Essence" of lemons, instead of essential oil or otto of lemons, &c. The sooner the correct nomenclature is used in perfumery, as well as in the allied arts, the better, and the fewer blunders will be made in the dispensatory. It appears to the writer, that if the nomenclature of these substances were revised, it would be serviceable; and he would suggest that, as a significant, brief, and comprehensive term, Otto be used as a prefix to denote that such and such a body is the odoriferous principle of the plant. We should then have otto of lavender instead of essential oil of lavender, &c., &c. In this work it will be seen that the writer has generally used the word otto in place of "essential oil," in accordance with his views. Where there exists a solution of an essential oil in a fat-oil, the necessity of some such significant distinction is rendered obvious, for commercially such articles are still called "oils"—oil of jasmine, oil of roses, &c. It cannot be expected that the public will use the words "fat" oil and "essential" oil, to distinguish these differences of composition.

These are several good reasons why the odoriferous principle of plants should not be denominated oils. In the first place, it is a bad principle to give any class of substances the same signification as those belonging to another. Surely, there are enough distinguishing qualities in their composition, their physical character, and chemical reaction, to warrant the application of a significant name to that large class of substances known as the aroma of plants!

When the chemical nomenclature was last revised, the organic bodies were little dealt with. We know that we owe this universal "oil" to the old alchemist, much in the same way as "spirit" has been used, but a little consideration quickly indicates the folly of its continued use. We can no longer call otto of rosemary, or otto of nutmegs, essential oil of rosemary, or nutmegs, with any more propriety than we can term sulphuric acid "oil" of vitriol. All the chemical works speak of the odoriferous bodies as "essential" or "volatile" oils, and of the greasy bodies as "fat" or "unctuous" oils. Oils, properly so called, unite with salifiable bases and form soap; whereas the essential or volatile oils—*i. e.*, what we would please to call the ottos—do no such thing. On the contrary, they unite with acids in the majority of instances.

The word oil must hereafter be confined to those bodies to which its literal meaning refers—fat, unctuous, inodorous (when pure), greasy substances—and can no longer be applied to those odoriferous materials which possess qualities diametrically opposite to oil. We have grappled with "spirit" and fixed its meaning in a chemical sense; we have no longer "spirit" of salt, or "spirit" of hartshorn. Let us no longer have almond oil "essential," almond oil "unctuous," and the like.

It remains only for us to complete the branch of perfumery which relates to odors for the handkerchief, by giving the formulæ for preparing the most favorite "bouquets" and "nosegays." These, as before stated, are but mixtures of the simple ottos in spirit, which, properly blended, produce an agreeable and characteristic odor—an effect upon the smelling nerve similar to that which music or the mixture of harmonious sounds produces upon the nerve of hearing, that of pleasure.

THE ALHAMBRA PERFUME.

Extract of tubereuse,	1 pint.
" geranium,	½ pint.
" acacia,	¼ pint.
" fleur d'orange,	¼ pint.
" civet,	¼ pint.

THE BOSPHORUS BOUQUET.

Extract of acacia,		1 pint.
" jasmine,	of each,	½ pint.
" rose, triple,		
" fleur d'orange,		
" tubereuse,		
" civet,		¼ pint.
Otto of almonds,		10 drops.

BOUQUET D'AMOUR.

Esprit de rose,	from pomade, of each,	1 pint.
" jasmin,		
" violette,		
" cassie,		
Extract of musk,	of each,	½ pint.
" ambergris,		

Mix and filter.

BOUQUET DES FLEURS DU VAL D'ANDORRE.

Extrait de jasmin,	from pomade, of each,	1 pint.
" rose,		
" violette,		
" tuberose,		
Extract of orris,		1 pint.
Otto of geranium,		¼ oz.

BUCKINGHAM PALACE BOUQUET.

Extrait de fleur d'orange, " cassie, " jasmin, " rose,	from pomade, of each,	1 pint.
Extract of orris, " ambergris,	of each,	½ pint.
Otto of neroli,		½ drachm.
" lavender,		½ drachm.
" rose,		1 drachm.

BOUQUET DE CAROLINE; also called BOUQUET DES DELICES.

Extrait de rose, " violette, " tuberose,	from pomade, of each,	1 pint.
Extract of orris, " ambergris,	of each,	½ pint.
Otto of bergamot,		¼ oz.
Citron zeste,		½ oz.

THE COURT NOSEGAY.

Extrait de rose, " violette, " jasmin,	of each,	1 pint.
Esprit de rose, triple,		1 pint.
Extract of musk, " ambergris,	of each,	1 oz.
Otto citron zeste, " bergamot,	of each,	½ oz.
" neroli,		1 drachm.

EAU DE CHYPRE.

This is an old-fashioned French perfume, presumed to be derived from the *Cyperus esculentus* by some, and by others to be so named after the Island of Cyprus; the article sold, however, is made thus:

Extract of musk,		1 pint.
" ambergris,	of each,	½ pint.
" vanilla,		
" Tonquin bean,		
" orris,		
Esprit de rose, triple,		2 pints.

The mixture thus formed is one of the most lasting odors that can be made.

EMPRESS EUGENIE'S NOSEGAY.

Extract of musk,	of each,	¼ pint.
" vanilla,		
" Tonquin bean,		
" neroli,		
" geranium,	of each,	½ pint.
" rose, triple,		
" santal,		

ESTERHAZY BOUQUET.

Extrait de fleur d'orange (from pomade),		1 pint.
Esprit de rose, triple,		1 pint.
Extract of vitivert,	of each,	1 pint.
" vanilla,		
" orris,		
" Tonquin,		
Esprit de neroli,		1 pint.
Extract of ambergris,		½ pint.
Otto of santal,		½ drachm.
" cloves,		½ drachm.

Notwithstanding the complex mixture here given, it is the vitivert that gives this bouquet its peculiar character. Few perfumes have excited greater *furore* while in fashion.

ESS BOUQUET.

The reputation of this perfume has given rise to numerous imitations of the original article, more particularly on the continent. In many of the shops in Germany and in France will be seen bottles labelled in close imitation to those sent out by Bayley & Co., Cockspur Street, London, who are, in truth, the original makers.

Esprit de rose, triple,	1 pint.
Extract of ambergris,	2 oz.
" orris,	8 oz.
Otto of lemons,	¼ oz.
" bergamot,	1 oz.

The name "Ess" bouquet, which appears to puzzle some folk, is but a mere contraction of "essence" of bouquet.

EAU DE COLOGNE.

(*La première qualité.*)

Spirit (from grape) 60 over proof,	6 gallons.
Otto of neroli, *pétale*,	3 oz.
" " *bigarade*,	1 oz.
" rosemary,	2 oz.
" orange zeste,	5 oz.
" citron zeste,	5 oz.
" bergamot,	2 oz.

Mix with agitation; then allow it to stand for a few days perfectly quiet before bottling.

EAU DE COLOGNE

(*La deuxième qualité.*)

Spirit (from corn),		6 gallons.
Otto of *Petit-grain*,		2 oz.
" neroli, *pétale*,		½ oz.
" rosemary,		2 oz.
" orange peel,	of each,	4 oz.
" lemon,		
" bergamot,		

Although eau de Cologne was originally introduced to the public as a sort of "cure-all," a regular "elixir of life," it now takes its place, not as a pharmaceutical product, but among perfumery. Of its remedial qualities, we can say nothing, such matter being irrelevant to the purpose of this book. Considered, however, as a perfume, in the public taste it ranks very high; and although it is exceedingly volatile and evanescent, yet it has that excellent quality which is called "refreshing." Whether this be due to the rosemary or to the spirit, we cannot say, but think something may be attributed to both. One important thing relating to eau de Cologne must not, however, pass unnoticed, and that is, the quality of the spirit used in its manufacture. The utter impossibility of making brandy with English spirit in any way to resemble the real Cognac, is well known. It is equally impossible to make eau de Cologne with English spirit, to resemble the original article. To speak of the "purity" of French spirit, or of the "impurity" of English spirit, is equally absurd. The fact is, that spirit derived from grapes and spirit obtained from corn have each so distinct and characteristic an aroma, that the one cannot be mistaken for the other. The odor of grape spirit is said to be due to the œnanthic ether which it contains. The English spirit, on the other hand, owes its odor to fusel oil. So powerful is the œnanthic ether in the French spirit, that notwithstanding the addition to it of such intensely odoriferous substances as the ottos of neroli, rosemary, and others, it still gives a characteristic perfume to the products made containing it, and hence the difficulty of preparing eau de Cologne with any spirit destitute of this substance.

Although very fine eau de Cologne is often made by merely mixing the ingredients as indicated in the recipe as above, yet it is better, first, to mix all the citrine ottos with spirit, and then to distil the mixture, afterwards adding to the distillate the rosemary and nerolies, such process being the one adopted by the most popular house at Cologne.

A great many forms for the manufacture of eau de Cologne have been published, the authors of some of the recipes evidently having no knowledge, in a practical sense, of what they were putting, by theory, on paper; other venturers, to show their lore, have searched out all the aromatics of Lindley's Botany, and would persuade us to use absinthe, hyssop, anise, juniper, marjoram, caraway, fennel, cumin, cardamom, cinnamon, nutmeg, serpolet, angelica, cloves, lavender, camphor, balm, peppermint, galanga, lemon thyme, &c., &c., &c.

All these, however, are but hum——! Where it is a mere matter of profit, and the formula that we have given is too expensive to produce the article required, it is better to dilute the said Cologne with a weak spirit, or with rose-water, and then filter it through paper with a little magnesia, rather than otherwise alter its form; because, although weak, the true aroma of the original article is retained.

The recipe of the second quality of eau de Cologne is given, to show that a very decent article can be produced with English spirit.

FLOWERS OF ERIN.

Extract of white rose (see WHITE ROSE), . .	1 pint.
" vanilla, ...	1 oz.

NEW-MOWN HAY.

"Good hay—sweet hay hath no fellow,"

says Shakspeare; true, the fragrance of hay is one of the most grateful to our senses, and it is natural that there should be a demand for a perfume of this odor.

The odor of hay is due to the vernal grass it contains. When vernal grass is well grown, cut and dried, it evolves an odorous principle similar to that yielded by the Courmarin or Tonquin Bean; hence the employment of the latter in the following mixture, which gives general satisfaction.

Extract of Tonquin bean,	2 pints.
“ geranium,	1 pint.
“ orange flowers,	1 pint.
“ rose, “	1 pint.
“ “ triple,	1 pint.
“ jessamine,	1 pint.

ROYAL HUNT BOUQUET.

Esprit de rose, triple,		1 pint.
“ neroli,	of each,	¼ pint.
“ acacia,		
“ fleur d'orange,		
“ musc,		
“ orris,		
“ Tonquin,		½ pint.
Otto of citron zeste,		2 drachms.

BOUQUET DE FLORA; otherwise, EXTRACT OF FLOWERS.

Esprit de rose,	from pomade, of each,	1 pint.
“ tuberose,		
“ violette,		
Extract of benzoin,		1½ oz.
Otto of bergamot,		2 oz.
“ citron zeste,	of each,	½ oz.
“ orange zeste,		

THE GUARDS' BOUQUET.

Esprit de rose,		2 pints.
“ neroli,	of each,	½ pint.
Extract of vanilla,		
“ orris,		
“ musk,		¼ pint.
Otto of cloves,		½ drachm.

Fleur d'Italie; or, Italian Nosegay.

Esprit de rose, from pomade,		2 pints.
" rose, triple,		1 pint.
" jasmin,	from pomade, each,	1 pint.
" violette,		
Extract of cassie,		½ pint.
" musk,	of each,	2 oz.
" ambergris,		

Jockey Club Bouquet (*English Formula*).

Extract of orris root,		2 pints.
Esprit de rose, triple,		1 pint.
" rose, de pommade,		1 pint.
Extract de cassie,	de pommade, of each,	½ pint.
" tubereuse,		
" ambergris,		½ pint.
Otto of bergamot,		½ oz.

Jockey Club Bouquet (*French Formula*).

Esprit de rose, de pommade,	1 pint.
" tubereuse,	1 pint.
" cassie,	½ pint.
" jasmin,	¾ pint.
Extract of civet,	3 oz.

Independently of the materials employed being different to the original English recipe, it must be remembered that all the French perfumes are made of brandy, *i. e.*, grape spirit; whereas the English perfumes are made with corn spirit, which alone modifies their odor. Though good for some mixtures, yet for others the grape spirit is very objectionable, on account of the predominance of its own aroma.

We have spoken of the difference in the odor between the English and French spirit; the marked distinction of British and Parisian perfumes made according to the same recipes is entirely due to the different spirits employed. Owing to the strong "bouquet" of the French spirit in comparison with ours, the continental perfumers claim a superiority in the quality of their perfumes, but this aroma in truth is objectionable in many instances. Now, although we candidly admit that *some* odors are better when prepared with grape spirit than with that from corn, yet there are others which are undoubtedly the best when prepared with spirit derived from the latter source. Musk, ambergris, civet, violet, tubereuse, and jasmine, if we require to retain their true aroma when in solution in alcohol, must be made with the British spirit.

All the citrine odors, verveine, vulnary waters, eau de Cologne, eau de Portugal, eau d'Arquebuzade, and lavender, can alone be brought to perfection by using the French spirit in their manufacture. If extract of jasmine, or extract of violet, &c., be made with the French or brandy spirit, the true characteristic odor of the flower is lost to the olfactory nerve—so completely does the œnanthic ether of the grape spirit hide the flowery aroma of the otto of violet in solution with it. This solves the paradox that English extract of violet and its compounds, "Excelsior," &c., is at all times in demand on the Continent, although the very flowers with which we make it are grown there.

On the contrary, if an English perfumer attempts to make eau de Portugal, &c., to bear any comparison, as a fine odor, to that made by Lubin of Bond Street, London, without using grape spirit, his attempt will prove a failure. True, he makes eau de Portugal even with English corn spirit, but judges of the article—and they alone can stamp its merit—discover instantly the same difference as the connoisseur finds out between "Patent British" and foreign brandy.

Perhaps it may not be out of place here to observe that what is sold in this country as British brandy is in truth grape spirit, that is, foreign brandy, very largely mixed with English spirit! By this scheme, a real semblance to the foreign brandy flavor is maintained; the difference in duty upon English and foreign spirit enables the makers of the "capsuled" article to undersell those who vend the unsophisticated Cognac.

Some chemists, not being very deep in the "tricks of trade," have thought that some flavoring, or that œnanthic ether, was used to impart to British spirit the Cognac aroma. An article is even in the market called "Essence of Cognac," but which is nothing more than very badly made butyric ether.

On the Continent a great deal of spirit is procured by the fermentation of the molasses from beet-root; this, of course, finds its way into the market, and is often mixed with the grape spirit; so, also, in England we have spirit from potatoes which is mixed in the corn spirit. These adulterations, if we may so term them, modify the relative odors of the primitive alcohols.

A Japanese Perfume.

Extract of rose, triple,	of each, . .	½ pint.
" vitivert,		
" patchouly,		
" cedar,		
" santal,		
" verveine,	. . . . .	¼ pint.

KEW GARDEN NOSEGAY.

Esprit de neroli (*pétale*),		1 pint.
" cassie, " tubereuse, " jasmin,	from pomade, of each,	½ pint.
" geranium,		½ pint.
" musk, " ambergris,	of each,	3 oz.

STOLEN KISSES.

> "The kisses of a thousand flowers,
> Stolen from them while they sleep."—R. BROUGH.

Extract of jonquil, " orris,	of each,	1 quart.
Extract of Tonquin, " rose, triple, " acacia,	of each,	1 pint.
" civet, " ambergris,	of each,	¼ pint.
Otto of citronella,		1 drachm.
" verbena,		½ drachm.

EAU DES MILLEFLEURS.

Esprit de rose, triple,		1 pint.
" rose de pommade, " tubereuse, " jasmin, " fleur d'orange, " cassie, " violette,	from pomade, of each,	½ pint.
Extract of cedar,		¼ pint.
" vanilla, " ambergris, " musk,	of each,	2 oz.
Otto of almonds, " neroli, " cloves,	of each,	10 drops.
" bergamot,		1 oz.

These ingredients are to remain together for at least a fortnight, then filtered prior to sale.

MILLEFLEURS ET LAVENDER.

Essence of lavender (*Mitcham* or *Hitchin*),	½ pint.
Eau des millefleurs,	1 pint.

DELCROIX'S MILLEFLEUR LAVENDER.

Spirits from grape,	1 pint.
French otto of lavender,	1 oz.
Extract of ambergris,	2 oz.

The original "lavender aux millefleurs" is that of Delcroix; its peculiar odor is due to the French otto of lavender, which, although some folks like it, is very inferior to the English otto of lavender; hence the formula first given is far superior to that by the inventor, and has almost superseded the original preparations.

There are several other compounds or bouquets, of which lavender is the leading ingredient, and from which they take their name, such as lavender and ambergris, lavender and musk, lavender and maréchale, &c., all of which are composed of fine spirituous essences of lavender, with about 15 per cent. of any of the other ingredients.

BOUQUET DU MARÉCHALE.

Esprit de rose, triple, Extrait de fleur d'orange,	of each,	1 pint.
" vitivert, " vanilla, " orris, " Tonquin, Esprit de neroli,	of each,	½ pint.
Extract of musk, " ambergris,	of each,	¼ pint.
Otto of cloves, " santal,	of each,	½ drachm.

EAU DE MOUSSELINE.

Bouquet de maréchale,		1 pint.
Extrait de cassie, " jasmin, " tubereuse, " rose,	from pomade, of each,	½ pint.
Otto of santal,		2 drachms.

BOUQUET DE MONTPELLIER.

Extrait de tubereuse,		1 pint.
" rose de pommade,		1 pint.
" rose, triple,		1 pint.
Extract of musk, " ambergris,	of each,	¼ pint.
Otto of cloves,		1½ drachm.
" bergamot,		½ oz.

A century ago Montpellier was the principal seat of the manufacture of perfumery, and the name of the above scent is handed down from a recipe of still later date. We find Evelyn reminding his kinsman, when about to make the *grand tour*, that—

> Montpellier was wont to be the place of rare opportunities for learning the many excellent receipts to make perfumes, sweet powders, pomades, antidotes, and divers such curiosities, which I know (he adds) you will not omit; for though they are indeed but trifles in comparison with more solid things, yet if ever you should affect to live a retired life hereafter, you will take more pleasure in these recreations than you can now imagine.

Doubtless the philosophical master of Sayes Court had himself made trial of the recreation.

CAPRICE DE LA MODE.

Extrait de jasmin, " tubereuse, " cassie, " fleur d'orange,	of each,	½ pint.
Otto of almonds,		10 drops.
" nutmegs,		10 drops.
Extract of civet,		¼ pint.

MAY FLOWERS.

Extract of rose (de pommade),	of each,	½ pint.
" jasmine,		
" fleur d'orange,		
" cassie,		
" vanilla,		1 pint.
Otto of almonds,		¼ drachm.

LEAP-YEAR BOUQUET.

"In leap-year *they* have power to choose ;
Ye men no charter to refuse."—OLD SONG.

Extrait de tubereuse,	of each,	1 pint.
" jasmin,		
" rose, triple,	of each,	½ pint.
" santal,		
" vitivert,		
" patchouly,		
" verbena,		⅛ pint.

INTERNATIONAL BOUQUET OF ALL NATIONS.

Nations wherein the Odors are produced.		
TURKEY,	Esprit de rose, triple,	½ pint.
AFRICA,	Extract of jasmine,	½ pint.
ENGLAND,	" lavender,	¼ pint.
FRANCE,	" tubereuse,	½ pint.
SOUTH AMERICA,	" vanilla,	¼ pint.
TIMOR,	" santal,	¼ pint.
ITALY,	" violet,	1 pint.
HINDOOSTAN,	" patchouly,	¼ pint.
CEYLON,	Otto of citronella,	1 drachm.
SARDINIA,	" lemons,	¼ oz.
TONQUIN,	Extract of musk,	¼ pint.

ISLE OF WIGHT BOUQUET.

Extract of orris,	½ pint.
" vitivert,	¼ pint.
" santal,	1 pint.
" rose,	½ pint.

Bouquet du Roi.

Extract of jasmine, " violet, " rose,	from pomade, of each,	1 pint.
" vanilla, " vitivert,	of each,	¼ pint.
" musk, " ambergris,	of each,	1 oz.
Otto of bergamot,		1 drachm.
" cloves,		1 oz.

Bouquet de la Reine d'Angleterre.

Esprit de rose, Extrait de violette,	from pomade, of each,	1 pint.
" tubereuse,		½ pint.
" fleur d'orange,		¼ pint.
Otto of bergamot,		¼ oz.

Rondeletia.

The perfume bearing the above name is undoubtedly one of the most gratifying to the smelling nerve that has ever been made. Its inventors, Messrs. Hannay and Dietrichsen, have probably taken the *name* of this odor from the *Rondeletia*, the *Chyn-len* of the Chinese; or from the *R. odorata* of the West Indies, which has a sweet odor. We have before observed that there is a similarity of effect upon the olfactory nerve produced by certain odors, although derived from totally different sources; that, for instance, otto of almonds may be mixed with extract of violet in such proportion that, although the odor is increased, yet the character peculiar to the violet is not destroyed. Again: there are certain odors which, on being mixed in due proportion, produce a new aroma, perfectly distinct and peculiar to itself. This effect is exemplified by comparison with the influence of certain colors, when mixed, upon the nerve of vision: such, for instance, as when yellow and blue are mixed, the result we call green; or when blue and red are united, the compound color is known as puce or violet.

Now when the odor of lavender and odor of cloves are mixed, they produce a new fragrance, *i. e.*, Rondeletia! It is such combinations that constitute in reality "a new perfume," which, though often advertised, is very rarely attained. Jasmine and patchouly produce a novel aroma, and many others in like manner; proportion and relative strength, when so mixed, must of course be studied, and the substances used accordingly. If the same quantity of any given otto be dissolved in a like proportion of spirit, and the solution be mixed in equal proportions, the strongest odor is instantly indicated by covering or hiding the presence of the other. In this way we discover that patchouly, vitivert, lavender, and verbena are the most potent of the vegetable odors, and that violet, tubereuse, and jasmine, are the most delicate.

Many persons will at first consider that we are asking too much, when we express a desire to have the same deference paid to the olfactory nerve as to the other nerves that influence our physical pleasures and pains. By tutoring the olfactory nerve, it is capable of perceiving matter in the atmosphere of the most subtle nature: not only that which is pleasant, but also such as are unhealthful. If an unpleasant odor is a warning to seek a purer atmosphere, surely it is worth while to cultivate that power which enables us to act up to that warning for the general benefit to health.

If we do not do so, some future Macaulay will say of us as David said of the idols, "Noses have they, but they smell not." Shakspeare tells us

> "A good nose is requisite." (*Winter's Tale*, iv, 3.)

Again, he observes,

> "Their very noses had been counsellors." (*Henry VIII*, 1.)

To return, however, to Rondeletia, it will be seen by the annexed formula, that, besides the main ingredients to which it owes its peculiar character—that is, cloves and lavender—it contains musk, vanilla, &c. These substances are used, in these as in nearly all other bouquets, for the sole purpose of fixing the more volatile odors to the handkerchief.

ESSENCE OF RONDELETIA.

Spirit (60 over proof),		1 gallon.
Otto of lavender,		2 oz.
" cloves,		1 oz.
" roses,		3 drachms.
" bergamot,		1 oz.
Extract of musk,	of each,	¼ pint.
" vanilla,		
" ambergris,		

The mixture must be made at least a month before it is fit for sale. Very excellent Rondeletia may also be made by adding ¾ drachm otto of cloves to a pint of lavender millefleur.

PIESSE'S POSY.

Extract of rose (from pomade),		1 pint.
Esprit de rose triple,		½ pint.
Extract of jasmine, " violet,	from pomade, of each,	½ pint.
Extract of verbena, " cassie,	of each,	2½ oz.
Otto of lemons, " bergamot,	of each,	¼ oz.
Extract of musk, " ambergris,	of each,	1 oz.

SUAVE.

Extract of tubereuse, " jasmine, " cassie, " rose,	from pomade, of each,	1 pint.
" vanilla,		5 oz.
" musk, " ambergris,	of each,	2 oz.
Otto of bergamot,		¼ oz.
" cloves,		1 drachm.

SPRING FLOWERS.

Extract of rose, " violet,	from pomade, of each,	1 pint.
" rose, triple,		2½ oz.
" cassie,		2½ oz.
Otto of bergamot,		2 drachms.
Extract of ambergris,		1 oz.

The just reputation of this perfume places it in the first rank of the very best mixtures that have ever been made by any manufacturing perfumer. Its odor is truly flowery, but peculiar to itself. Being unlike any other aroma, it cannot well be imitated, chiefly because there is nothing that we are acquainted with that at all resembles the odor of the esprit de rose, as derived from macerating rose pomade in spirit, to which, and to the extract of violet, nicely counterpoised, so that neither odor predominates, the peculiar character of "Spring Flowers" is due; the little ambergris that is present gives permanence to the odor upon the handkerchief, although, from the very nature of the ingredients, it may be said to be a fleeting odor. "Spring Flowers" is an Englishman's invention, but there is scarcely a perfumer in Europe that does not attempt an imitation.

Tulip Nosegay.

Nearly all the tulip tribe, although beautiful to the eye, are inodorous. The variety called the Duc van Thol, however, yields an exquisite perfume, but is not used by the manufacturer for the purpose of extracting its odor. He, however, borrows its poetical name, and makes an excellent imitation thus:

Extract of tubereuse,	from pomade, of each,	1 pint.
" violet,		
" jasmin,		
" rose,		½ pint.
" orris,		3 oz.
Otto of almonds,		3 drops.

Violette des Bois.

Under the head Violet, we have already explained the method of preparing the extract or essence of that modest flower. The Parisian perfumers sell a mixture of violet, which is very beautiful, under the title of the Violette des Bois, or the Wood Violet, which is made thus:

Extract of violet,	1 pint.
" orris,	3 oz.
" cassie,	3 oz.
" rose (from pomade),	3 oz.
Otto of almonds,	3 drops.

This mixture, in a general way, gives more satisfaction to the customer than the pure violet.

RIFLE VOLUNTEERS' GARLAND.

Alcohol,		1 pint.
Otto of neroli, " rose, " lavender, " bergamot,	of each,	¼ oz.
" cloves,		8 drops.
Extract of orris,		1 pint.
" jasmine, " cassie,	of each,	¼ pint.
" musk, " ambergris,	of each,	2½ oz.

YACHT CLUB BOUQUET.

Extract of santal,		1 pint.
" neroli,		1 pint.
" jasmine, " rose, triple,	of each,	½ pint.
" vanilla,		¼ pint.
Flowers of benzoin,		¼ oz.

WEST END BOUQUET.

Extract of cassie, " violet, " tuberose, " jasmine,	of each,	1 pint.
Esprit de rose, triple,		8 pints.
Extract of musk, " ambergris,	of each,	½ pint.
Otto of bergamot,		1 oz.

We have now completed the branch of the art of perfumery which relates to the handkerchief perfumes, or wet perfumery. Although we have rather too much encroached upon the space of this work, in giving the composition of so many bouquets, yet there are many left unnoticed which are popular. Those that are given are noticed more particularly for the peculiar character of their odor, and are selected from more than a thousand recipes that have been practically tried.

Those readers who require to know anything about the simple extracts of flowers, are referred to them under their respective alphabetical titles.

FOUNTAIN RING.

As a means of carrying scent about the person, the FOUNTAIN FINGER-RING has recently become famous.

The delight of all who have seen this little conceit is most gratifying to its inventor. It is at once useful and ornamental. By the least pressure, the wearer of the ring can cause a jet of perfume to arise from it at any time desired—thus every one can carry with him to a ball, concert, or sick-chamber, enough scent, so refreshing! for the time being.

The practical application of this invention causes a good deal of merriment and laughter. A gentleman who abhors perfume, unless it be snuff, "squeezing" a lady's hand, will receive a shower of the eternal frangipani or kiss-me-quick, much to the delight of all present at being thus sweetly "found out."

The rings can be filled with perfume with the greatest ease—thus: Press the ball at the back of the ring nearly flat, pour scent into a cup and dip the ring into it; the elasticity of the ball will then draw the perfume into the interior till full.

SECTION IX.

"Earth smiles in all her rich attire,
Here fragrant plants their odors shed."
HAYDN'S *Creation.*

THE previous articles have exclusively treated of Wet Perfumes; the present matter relates to Dry Perfumes,—sachet powders, tablets, pastilles, fumigation by the aid of heat, of volatile odorous resins, &c., &c. The perfumes used by the ancients were, undoubtedly, nothing more than the odoriferous gums which naturally exude from various trees and shrubs indigenous to the Eastern hemisphere: that they were very extensively used and much valued, we have only to read the Scriptures for proofs: "Who is this that cometh . . . . . perfumed with myrrh and frankincense, with all the powders of the merchant?" (Song of Solomon 3 : 6.) Abstaining from the use of perfume in Eastern countries is considered as a sign of humiliation. "And it shall come to pass that instead of sweet smell there shall be stink." (Isaiah 3 : 20, 24.) "And they came and brought tablets." (Exod. 35 : 22.) The word tablets in this passage means perfume-boxes, curiously inlaid, made of metal, wood, and ivory. Some of these boxes may have been made in the shape of buildings, which would explain the word *palaces* in Psalm 45 : 8: "All thy garments smell of myrrh, and aloes, and cassia, out of the ivory palaces, whereby they have made thee glad." From what is said in Matt. 2:11, it would appear that perfumes were considered among the most valuable gifts that man could bestow: "And when they [the wise men] had opened their treasures, they presented unto him [Christ] gifts; gold, and frankincense, and myrrh." As far as we are able to learn, all the perfumes used by the Egyptians and Persians during the early period of the world were *dry* perfumes, consisting of spikenard (*Nardostachys Jatamansi*), myrrh, olibanum, and other gum-resins, nearly all of which are still in use by the manufacturers of odors. Among the curiosities shown at Alnwick Castle is a vase that was taken from an Egyptian catacomb. It is full of a mixture of gum-resins, &c., which evolve a pleasant odor to the present day, although probably 3000 years old. We have no doubt that the original use of this vase and its contents was for perfuming apartments, in the same way that pot-pourri is now used.

Sachet Powders.

The French and English perfumers concoct a great variety of these substances, which, being put into silk bags or ornamental envelopes, find a ready sale, being both good to smell and economical as a means of imparting an agreeable odor to linen and clothes as they lie in drawers. The following formula shows their composition. Every material is either to be ground in a mill, or powdered in a mortar, and afterwards sifted.

Acacia Sachet.

Cassie flower heads,	1 lb.
Orris powder,	1 lb.

This is a very nice sachet, and smells something like tea.

The materials employed in the manufacture of sachet powders are those only which retain an odor or are fragrant in their dried state, which include nearly all that are termed herbs in domestic economy, such as lemon thyme, mint, &c., and some few leaves of plants, such as those of the orange tree, citron tree, &c. Very few blossoms, however, except lavender, rose, and cassie, have any fragrance when dried. The jasmine, tubereuse, violet, and

Drying House.

mignonette, retain none of their primitive smell when thus treated, indicating clearly that the odors of these plants are generated only during their life and are not stored up in their petals, as is the case with the others named.

The engraving on the preceding page shows the warm air cupboards, where herbs are dried for this purpose.

From the rafters of the roof of the drying-house are suspended in bunches all the herbs that the grower cultivates. To accelerate the desiccation of rose leaves, and other petals, the drying-house is fitted up with large cupboards, which are slightly warmed with a convolving flue from a fire below.

The flower buds are placed upon trays made of canvas, stretched upon a frame, each being not less than twelve feet long by four feet wide. When charged, they are placed on shelves in the warm cupboards till dry.

SACHET AU CHYPRE.

Ground rose-wood,	1 lb.
Ground cedar-wood,	1 lb.
Ground santal-wood,	1 lb.
Otto of rose-wood,	3 drachms.

Mix and sift; it is then fit for sale.

FRANGIPANI SACHET.

Orris-root powder,		3 lbs.
Vitivert powder,		¼ lb.
Santal-wood powder,		¼ lb.
Otto of neroli, “ rose, “ santal,	of each,	1 drachm.
Musk pods, ground,		1 oz.
“ civet,		¼ oz.

The name of this sachet has been handed down to us as being derived from a Roman of the noble family of Frangipani. Mutio Frangipani was an alchemist, evidently of some repute, as we have another article called rosolis, or ros-solis, *sun-dew*, an aromatic spirituous liquor, used as a stomachic, of which he is said to have been the inventor, composed of wine in which is steeped coriander, fennel, anise, and musk.

HELIOTROPE SACHET.

Powdered orris,	2 lbs.
Rose leaves, ground,	1 lb.
Tonquin beans, ground,	½ lb.
Vanilla beans,	¼ lb.
Grain musk,	¼ oz.
Otto of almonds,	5 drops.

When well mixed by sifting in a coarse sieve, it is fit for sale.

It is one of the best sachets made, and is so perfectly *au naturel* in its odor to the flower from which it derives its name, that no person unacquainted with its composition would, for an instant, believe it to be any other than the "real thing."

LAVENDER SACHET.

Lavender flowers, ground,	1 lb.
Gum benzoin, in powder,	¼ lb.
Otto of lavender,	¼ oz.

MARÉCHALE SACHET.

Powder of santal-wood,	½ lb.
" orris root,	½ lb.
Rose leaves, ground,	¼ lb.
Cloves, ground,	¼ lb.
Cassia bark,	¼ lb.
Grain musk,	½ drachm.

MOUSSELINE SACHET.

Vitivert, in powder,		1 lb.
Santal-wood,	each,	½ lb.
Orris,		
Black-currant leaves (*casse*),		½ lb.
Benzoin, in powder,		¼ lb.
Otto of thyme,		5 drops.
" roses,		½ drachm.

MILLEFLEUR SACHET.

Lavender flowers, ground,	each,	1 lb.
Orris,		
Rose leaves,		
Benzoin,		
Tonquin,	each,	¼ lb.
Vanilla,		
Santal,		
Musk and civet, each,		2 drachms.
Cloves, ground,		¼ lb.
Cinnamon,	each,	2 oz.
Allspice,		

PORTUGAL SACHET.

Dried orange peel,	1 lb.
" lemon peel,	½ lb.
" orris root,	½ lb.
Otto of orange peel,	1 oz.
" neroli,	¼ drachm.
" lemon grass,	¼ drachm.

PATCHOULY SACHET.

Patchouly herb, ground,	1 lb.
Otto of patchouly,	¼ drachm.

Patchouly herb is often sold in its natural state, as imported, tied up in bundles of half a pound each.

POT-POURRI.

This is a mixture of dried flowers and spices *not* ground.

Dried lavender,	1 lb.
Whole rose leaves,	1 lb.
Crushed orris (coarse),	½ lb.
Broken cloves, " cinnamon, " allspice, } each,	2 oz.
Table salt,	1 lb.

We need scarcely observe, that the salt is only used to increase the bulk and weight of the product, in order to sell it cheap.

OLLA-PODRIDA.

This is a similar preparation to Pot-Pourri. No regular form can be given for it, as it is generally made, or "knocked up," with the refuse and spent materials derived from other processes in the manufacture of perfumery; such as the spent vanilla after the manufacture of tincture or extract of vanilla, or of the grain musk from the extract of musk, orris from the tincture, Tonquin beans after tincturation, &c., &c., mixed up with rose-leaves, lavender, or any odoriferous herbs.

ROSE SACHET.

Rose heels or leaves,	1 lb.
Santal-wood, ground,	½ lb.
Otto of roses,	¼ oz.

SANTAL-WOOD SACHET.

This is a good and economical sachet, and simply consists of the ground wood. Santal-wood is to be purchased from some of the wholesale drysalters; the drug-grinders are the people to reduce it to powder; any attempt to do so at home will be found unavailing, on account of its toughness.

SACHET (*without a name*).

Dried thyme,	each,	¼ lb.
" lemon-thyme,		
" mint,		
" marjoram,		
" lavender,		½ lb.
" rose heels,		1 lb.
Ground cloves,		2 oz.
Calamus powder,		1 lb.
Musk, in grain,		1 drachm.

VERVEINE SACHET.

Lemon-peel, dried and ground,	1 lb.
Lemon-thyme,	¼ lb.
Otto of lemon-grass,	1 drachm.
" " peel,	½ oz.
" bergamot,	1 oz.

VITIVERT SACHET.

The fibrous roots of the *Anatherum muricatum*, being ground, constitute the sachet bearing the name as above, derived from the Tamool name, *vittie vayer*, and called by the Parisians *vetiver*. Its odor resembles myrrh. Vitivert is more often sold tied up in bunches, as imported from India, than ground, and is used for the prevention of moth rather than as a perfume.

VIOLET SACHET.

Black-currant leaves,	1 lb.
Cassie flower heads,	1 lb.
Rose heels or leaves,	1 lb.
Orris root powder,	2 lbs.
Otto of almonds,	¼ drachm.
Grain musk,	1 drachm.
Gum benzoin, in powder,	½ lb.

Well mix the ingredients by sifting; keep them together for a week in a glass or porcelain jar before offering for sale.

There are many other sachets manufactured besides those already given; but for actual trade purposes, there is no advantage in keeping a greater variety than those named. There are, however, many other substances used in a similar way; the most popular is the

PEAU D'ESPAGNE.

Peau d'Espagne, or Spanish skin, is highly perfumed leather, prepared thus: Good sound pieces of wash-leather are to be steeped in a mixture of ottos, in which are dissolved some odoriferous gum-resins: otto of neroli, otto of rose, santal, of each half an ounce; otto of lavender, verbena, bergamot, of each a quarter of an ounce; otto of cloves and cinnamon, of each two drachms; with any others thought fit. In half a pint of spirit, dissolve about four ounces of gum benzoin, and add it to the mixed ottos: now place the skin to steep in the mixture for a day or so, then remove it, and squeeze out the superfluous scent; finally, let the skin dry by exposure to the air. A paste is now to be made by rubbing in a mortar one drachm of civet with one drachm of grain musk, and enough solution of gum acacia or gum tragacantha to give it a spreading consistence; a little of any of the ottos that may be left from the steep, stirred in with the civet, &c., greatly assists in making the whole of an equal body; the skin, being cut up into pieces of about four inches square, is then to be spread over, plaster fashion, with the last-named compost: two pieces being put together, having the civet plaster inside them, are then to be placed between sheets of paper, weighted or pressed, and left to dry thus for a week; finally, each double skin, now called peau d'Espagne, is to be enveloped in some pretty silk or satin, and finished off to the taste of the vendor.

Skin or leather thus prepared evolves a pleasant odor for years, and hence they are frequently called "the inexhaustible sachet." Being flat, they are much used for perfuming writing-paper.

The lasting odor of Russia leather is familiar to all and pleasing to many; its perfume is due to the aromatic sanders wood, with which it is tanned, and to the empyreumatic oil of the bark of the birch tree, with which it is curried. The odor of Russia leather is, however, not *recherché* enough to be considered as a perfume; but, nevertheless, leather can be impregnated, by steeping in the various ottos, with any sweet scent, and which it retains to a remarkable degree, especially with otto of santal or lemon grass (*Verbena*). In this manner the odor of the peau d'Espagne can be greatly varied, and gives much satisfaction, on account of the permanence of its perfume.

Another way of making a good flat sachet, is to make a mixture of civet and musk, thinned down by rubbing in a mortar with liquid gum, spreading this compound on card-board; when dry, the card may be plaited over with colored ribbons.

PERFUMED LETTER PAPER.

If a piece of peau d'Espagne be placed in contact with paper, the latter absorbs sufficient odor to be considered as "perfumed." It is obvious that paper for writing upon must not be touched with any of the odorous tinctures or ottos, on account of any such matters interfering with the fluidity of the ink and action of the pen in writing upon it; therefore, by the process of infection, as it were, alone can writing-paper be perfumed to advantage.

Besides the sachets mentioned, there are many other substances applied as dry perfumery, such as scented wadding, used for quilting into all sorts of articles adapted for use in a lady's boudoir. Pin-cushions, jewel-cases, and the like, are lined with it. Cotton, so perfumed, is simply steeped in some strong essence, of musk, &c.

PERFUMED BOOK-MARKS.

We have seen that leather can be impregnated with odoriferous substances, in the manufacture of peau d'Espagne; just so is card-board treated prior to being made up into book-marks. In finishing them for sale, taste alone dictates their design; some are ornamented with beads, others with embroidery.

SCENTING GEMS.

Curiosity is excited to know how these gems are capable of yielding fragrance like a natural flower, and from what country they come.

As they are moved about in the *petite boîte* which contains them, we see the beauty of the kaleidoscope, and smell the most delightful odor. The truth is, that under the silver paper upon which the gems rest there is card punched to the size of the box; on each card is brushed a mixture of musk, civet, and otto of rose, rubbed together with a little mucilage of tragacanth.

Cassolettes and Printaniers.

Cassolettes and printaniers are little ivory boxes, of various designs, perforated in order to allow the escape of the odors contained therein. The paste used for filling these "ivory palaces whereby we are made glad," is composed of equal parts of grain musk, ambergris, seeds of the vanilla pod, otto of roses, and orris powder, with enough gum acacia, or gum tragacantha, to work the whole together into a paste. These things are now principally used for perfuming the pocket or reticule, much in the same way that ornamental silver and gold vinaigrettes are used.

Scented Shells.

Venetian Shells, which are found in such abundance on the shores of the Adriatic Sea, the Greek and Maldive Islands, are cleansed with weak muriatic acid; they then assume their pearly lustre. A mixture of ottos is made, say half a pound bergamot, a quarter of a pound of santal-wood, and two ounces each lavender and rosewood; in this mixture is rubbed one drachm of civet, and two drachms of musk.

The shells are then steeped into the scent, which ascends into their convolving tube. When dry, these shells will serve for perfuming jewel-cases and work-boxes.

INCENSE.

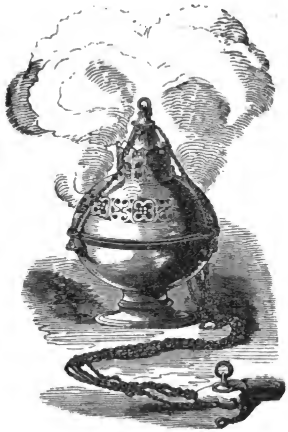
There is no doubt whatever that the origin of the use of pastils, or pastilles, as they are more often called, from the French, has been derived from the use of incense at the altars of the temples during the religious services: "According to the custom of the priest's office, his lot [Zacharias'] was to burn incense when he went into the temple of the Lord." (Luke 1: 9.) "And thou shalt make an altar to burn incense upon. . . . And Aaron shall burn thereon sweet incense every morning, when he dresseth the lamps, and at even when he lighteth the lamps, he shall burn incense upon it." (Exodus 30 : 1, 7.)

THE CENSER.

"On the walls of every temple in Egypt, from Meröe to Memphis, the censer is depicted smoking before the presiding deity of the place; on the walls of the tombs glow in bright colors the preparation of spices and perfumes." In the British Museum there is a vase (No. 2595) the body of which is intended to contain a lamp, the sides being perforated to admit the heat from the flame to act upon the projecting tubes, which are intended to contain ottos of flowers placed in the small vases at the end of the tubes; the heat volatilizes the ottos, and quickly perfumes an apartment. This vase or censer is from an Egyptian catacomb.

The censer, as used in the "holy places," is made either of brass, German silver, or the precious metals;

its form is represented in the engraving given below, the upper part being perforated to allow the escape of the perfume.* In the outer vessel is placed an inner one of copper, which can be taken out and filled with ignited charcoal. When in use, the ignited carbon is placed in the censer, and is then covered with the incense; the heat rapidly volatilizes it in visible fumes. The effect is assisted by the incense-bearer swinging the censer, attached to three long chains, in the air. The manner of swinging the censer varies slightly in the churches in Rome, in France,



The Censer.

---

* The word "perfume" is derived from the Latin *per fumus*, by smoke, because the first perfumes used were of the smoke kind.

and in England, some holding it above the head. At La Madeleine, the method is always to give the censer a full swing at the greatest length of the chains with the right hand, and to catch it up short with the left hand.

Several samples of "incense prepared for altar service," as sent out by Mr. Martin of Liverpool, appear to be nothing more than gum olibanum of indifferent quality, and not at all like the composition as especially commanded by God, the form of which is given in full in Exodus.

The pastils of the moderns are really but a very slight modification of the incense of the ancients. For many years they were called Osselets of Cyprus. In the old books on pharmacy a certain mixture of the then known gum-resins was called Suffitus, which being thrown upon hot ashes produced a vapor which was considered to be salutary in many diseases.

It is under the same impression that pastils and fumigating ribbon are now used, or at least to cover the *mal odeur* of the sick-chamber.

There is not much variety in the formula of the pastils that are now in use; we have first the

Indian or Yellow Pastils.

Santal-wood, in powder,	1 lb.
Gum benzoin,	1½ lb.
" Tolu,	¼ lb.
Otto of santal, " cassia, " cloves, } of each,	3 drachms.
Nitrate of potass,	1½ oz.

Mucilage of tragacantha, *q. s.* to make the whole into a stiff paste.

The benzoin, santal-wool, and Tolu are to be powdered, and mixed by sifting them, adding the ottos. The nitre, being dissolved in the mucilage, is then added. After well beating in a mortar, the pastils are formed in shape with a pastil mould, and gradually dried.

The Chinese josticks are of a similar composition, but contain no Tolu. Josticks are burned as incense in the temples of Booddh in the Celestial Empire, and to such an extent as to greatly enhance the value of santal-wood.

Incense Powders.

Santal-wood powder,	1 lb.
Cascarilla bark powder,	½ lb.
Benzoin "	½ lb.
Vitivert "	2 oz.
Nitrate of potass (saltpetre),	2 oz.
Grain musk,	¼ drachm.

Sift the whole well together several times through a fine sieve.

Perfumers' Pastils.

Well-burned charcoal,	1 lb.
Benzoin,	¾ lb.
Tolu, Vanilla pods, Cloves, } of each,	¼ lb.
Otto of santal, " neroli, } of each,	2 drachms.
Nitre,	1½ oz.
Mucilage tragacantha,	*q. s.*

PIESSE'S PASTILS.

Willow charcoal,		½ lb.
Benzoic acid,		6 oz.
Otto of thyme,	of each,	½ drachm.
" caraway,		
" rose,		
" lavender,		
" cloves,		
" santal,		
Grain musk,		1 drachm.
Pure civet,		¼ drachm.

Prior to mixing, dissolve ¾ oz. nitre in half a pint of distilled or ordinary rose-water; with this solution thoroughly wet the charcoal, and then allow it to dry in a warm place.

When the thus nitrated charcoal is quite dry, pour over it the mixed ottos, and stir in the flowers of benzoin. When well mixed by sifting (the sieve is a better tool for mixing powders than the pestle and mortar), it is finally beaten up in a mortar with enough mucilage to bind the whole together, and the less that is used the better.

A great variety of formulæ have been published for the manufacture of pastils; nine-tenths of them contain some woods or bark, or aromatic seeds. Now, when such substances are burned, the chemist knows that if the ligneous fibre contained in them undergoes combustion—the slow combustion—materials are produced which have far from a pleasant odor; in fact, the smell of burning wood predominates over the volatilized aromatic ingredients; it is for this reason alone that charcoal is used in lieu of other substances. The use of charcoal in a pastil is merely for burning, producing, during its combustion, the heat required to quickly volatilize the perfuming material with which it it surrounded. The product of the combustion of charcoal is inodorous, and therefore does not in any way interfere with the fragrance of the pastil. Such is, however, not the case with any ingredients that may be used that are not in themselves perfectly volatile by the aid of a small increment of heat. If combustion takes place, which is always the case with all the aromatic woods that are introduced into pastils, we have, besides the volatilized otto which the wood contains, all the compounds naturally produced by the slow burning of ligneous matter, spoiling the true odor of the other ingredients volatilized.

There are, it is true, certain kinds of fumigation adopted occasionally where these products are the materials sought. By such fumigation, as when brown paper is allowed to smoulder—*i.e.*, undergo slow combustion—in a room for the purpose of covering bad smells. By the quick combustion of tobacco—that is, combustion with flame—there is no odor developed; but by slow combustion, according to the method adopted by those who indulge in "the weed," the familiar aroma of "the cloud," is generated, and did not exist ready formed in the tobacco. Now a well-made pastil should not develop any odor of its own, but simply volatilize that fragrant matter, whatever it be, used in its manufacture. We think that the fourth formula given above carries out that object.

It does not follow that the formulæ that are here given produce at all times the odor that is most approved; it is evident that in pastils, as with other perfumes, a great deal depends upon taste. Many persons very much object to the aroma of benzoin, while they greatly admire the fumes of cascarilla.

THE PERFUME LAMP.

Shortly after the discovery of the peculiar property of spongy platinum remaining incandescent in the vapor of alcohol, the late Mr. I. Deck, of Cambridge, made a very ingenious application of it for the purpose of perfuming apartments. An ordinary spirit-lamp is filled with Hungary water, or other scented spirit, and "trimmed" with a wick in the usual manner. Over the centre of the wick, and standing about the eighth of an inch above it, a small ball of spongy platinum is placed, maintained in its position by being fixed to a thin glass rod, which is inserted into the wick.

Perfume Lamp.

Thus arranged, the lamp is to be lighted and allowed to burn until the platinum becomes red-hot; the flame may then be blown out; nevertheless the platinum remains incandescent for an indefinite period. The proximity of a red-hot ball to a material of the volatile quality of scented spirit, diffused over a surface of a cotton wick, as a matter of course causes its rapid evaporation, and, as a consequence, the diffusion of odor.

Instead of the lamp being charged with Hungary water, we may use eau de Portugal, verveine, or any other spirituous essence. Several perfumers make a particular mixture for this purpose, which is called

EAU A BRULER.

Hungary water, or eau de Cologne,		1 pint.
Tincture of benzoin,		2 oz.
" vanilla,		1 oz.
Otto of thyme,	of each,	½ drachm.
" mint,		
" nutmeg,		

Another form, called—

EAU POUR BRULER.

Rectified spirit,		1 pint.
Benzoic acid,		½ oz.
Otto of thyme,	of each,	1 drachm.
" caraway,		
" bergamot,		2 oz.

Persons who are in the habit of using the perfume lamps will, however, frequently observe that, whatever difference there may be in the composition of the fluid introduced into the lamp, there is a degree of similarity in the odor of the vapor when the platinum is in action. This arises from the fact, that so long as there is the vapor of alcohol, mixed with oxygen air, passing over red-hot platinum, certain definite products always result—namely, acetic acid, aldehyde, and acetal, which are formed more or less,—and impart a peculiar and rather agreeable fragrance to the vapor, but which overpowers any other odor that is present.

FUMIGATING PAPER.

There are two modes of preparing this article:

1. Take sheets of light cartridge paper, and dip them into a solution of alum—say, alum, one ounce;

water, one pint. After they are thoroughly moistened, let them be well dried; upon one side of this paper spread a mixture of equal parts of gum benzoin, olibanum, and either balsams of Tolu or Peru, or the benzoin may be used alone. To spread the gum, &c., it is necessary that they be melted in an earthenware vessel and poured thinly over the paper, finally smoothing the surface with a hot spatula. When required for use, slips of this paper are held over a candle or lamp, in order to evaporate the odorous matter, but not to ignite it. The alum in the paper prevents it, to a certain extent, from burning.

2. Sheets of good light paper are to be steeped in a solution of saltpetre, in the proportions of two ounces of the salt to one pint of water, to be afterwards thoroughly dried.

Any of the odoriferous gums, as myrrh, olibanum, benzoin, &c., are to be dissolved to saturation in rectified spirit, and with a brush spread upon both sides of the paper, or the paper may be dipped into the solution spread out in a broad flat dish, and then, being hung up, rapidly dries.

Slips of this paper are to be rolled up as spills, to be ignited, and then to be blown out.

The nitre in the paper causes a continuance of slow combustion, diffusing during that time the agreeable perfume of the odoriferous gums. If two of these sheets of paper be pressed together before the surface is dry, they will join and become as one. When cut into slips, they form what are called Odoriferous Lighters, or Perfumed Spills.

RIBBON OF BRUGES.

For Sweet Fumigation.

Make two tinctures in separate bottles, thus:

No. 1 Bottle.

Orris tincture,	½ pint.
Gum benzoin,	¼ lb.
Gum myrrh,	¾ oz.

No. 2 Bottle.

Alcohol,	½ pint.
Pod musk,	½ oz.
Otto rose,	1 drachm.

Let both stand one month. Now take 150 yards of undressed cotton tape, and steep it in a solution of one ounce of saltpetre in a pint of hot rose-water; then dry it; finally, filter the two tinctures, and mix them; then steep the ribbon into it; when dry, coil it up, and place it in the vase. Draw out an inch of the ribbon, light it, blow out the flame, and, as it smoulders, a fragrant vapor will rise into the air. When the ribbon has smouldered down to the bottom of the vase-cup it will no longer burn, consequently it spontaneously "goes out," which is both advantageous and economical under some circumstances.

I was led to this contrivance from a knowledge of the construction of the Davy Safety Lamp, which prevents fire from passing a small aperture, in consequence of the cooling effect of the surrounding body.

SECTION X.

PERFUMED SOAP.

THE word Soap, or Sope, from the Greek *sapon*, first occurs in the works of Pliny and Galen. Pliny informs us that soap was first discovered by the Gauls, that it was composed of tallow and ashes, and that the German soap was reckoned the best. According to Sismondi, the French historian, a soap-maker was included in the retinue of Charlemagne.

At Pompeii (overwhelmed by an eruption of Vesuvius A.D. 79), a soap-boiler's shop with soap in it was discovered during some excavations made there not many years ago.*

From these statements it is evident that the manufacture of soap is of very ancient origin; indeed, Jeremiah figuratively mentions it,—"For though thou wash thee with natron, and take thee much soap, yet thine iniquity is marked before me." (Jer. 2 : 22.) As does also Malachi: "He is like a refiner's fire, and like fullers' soap." (Mal. 3 : 2.)

Mr. Wilson says that the earliest record of the soap trade in England is to be found in a pamphlet in the British Museum, printed in 1641, entitled "A Short Account of the Soap Business." It speaks more particularly about the duty, which was then levied for the first time, and concerning certain patents which were granted to persons, chiefly Popish recusants, for some pretended new invention of white soap, "which in truth was not so." Sufficient is said here to prove that at that time soap-making was no inconsiderable art.

---

* Starke's Letters from Italy.

Prior to the removal of the excise duty upon soap, in 1853, it was a commercial impossibility for a perfumer to *manufacture* soap, because the law did not allow less than one ton of soap to be made at a time. This law, which, with certain modifications, had been in force since the reign of Charles I, confined the actual manufacture of that article to the hands of a few capitalists. Such law, however, was but of little importance to the perfumer, as a soap-boiling plant and apparatus is not very compatible with a laboratory of flowers; yet, in some exceptional instances, these excise regulations interfered with him; such, for instance, as that in making soft soap of lard and potash, known, when perfumed, as *Crême d'Amande;* or unscented, as a Saponaceous Cream, which has, in consequence of that law, been entirely thrown into the hands of our continental neighbors.

It would be out of place here to enter into the details of soap-making, because perfumers do not manufacture that substance, but are merely "remelters," to use a trade term. The dyer purchases his dyestuffs from the drysalters already fabricated, and these are merely modified under his hands to the various purposes he requires: so with the perfumer; he purchases the various soaps in their raw state from the soap-makers, these he mixes by remelting, then scents and colors according to the article to be produced.

The primary soaps are divided into hard and soft soaps: the hard soaps contain soda as the base; those which are soft are prepared with potash. These are again divisible into varieties, according to the fatty matter employed in their manufacture, also according to the proportion of alkali. The most important of these to the perfumer is what is termed curd soap, as it forms the basis of all the highly-scented soaps.

Curd Soap is a nearly neutral soap, of pure soda and fine tallow.

Oil Soap, as made in England, is an uncolored combination of olive oil and soda, hard, close grain, and contains but little water in combination.

Castile Soap, as imported from Spain, is a similar combination, but is colored by protosulphate of iron, the solution of the salt being added to the soap after it is manufactured; from the presence of alkali, decomposition of the salt takes place, and protoxide of iron is diffused through the soap of its well-known black color, giving the familiar marbled appearance to it. When the soap is cut up into bars, and exposed to the air, the protoxide passes by absorption of oxygen into peroxide; hence, a section of a bar of Castile soap shows the outer edge red-marbled while the interior is black-marbled. Some Castile soap is not artificially colored, but a similar appearance is produced by the use of a barilla or soda containing sulphuret of the alkaline base, and at other times from the presence of an iron salt.

Marine Soap is a cocoanut-oil soap, of soda, containing a great excess of alkali, and much water in combination.

Yellow Soap is a soda soap, of tallow, resin, and lard, &c., &c.

Palm Soap is a soda soap of palm oil, retaining the peculiar odor and color of the oil unchanged. The odoriferous principle of palm oil resembling that from orris-root, can be dissolved out of it by tincturation with alcohol; like ottos generally, it remains intact in the presence of an alkali; hence, soap made of palm oil retains the odor of the oil.

Fig Soft Soap is a combination of oils, principally olive oil of the commonest kind, with potash.

Naples Soft Soap is a fish oil (mixed with Lucca oil) and potash, colored brown for the London shavers, retaining, when pure, its unsophisticated "fishy" odor.

The public require a soap that will not shrink and change shape after they purchase it. It must make a profuse lather during the act of washing. It must not leave the skin rough after using it. It must be either quite inodorous, or have a pleasant aroma. None of the above soaps possess all these qualities in union, and, therefore, to produce such an article is the object of the perfumer in his remelting process.

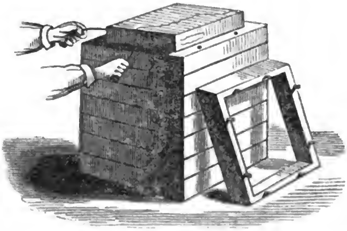
The above soaps constitute the real body or base of all the fancy scented soaps as made by the perfumers, which are mixed and remelted according to the following formula.

Remelting Soap.

The remelting process is exceedingly simple. The bar soap is first cut up into thin slabs, by pressing them against a wire fixed upon the working bench. This cutting wire (piano wire is the kind) is made taut upon the bench by being attached to two screws. These screws regulate the height of the wire from the bench, and hence the thickness of the slabs from the bars. The soap is cut up into thin slabs, because it would be next to impossible to melt a bar whole, on account of soap being one of the worst conductors of heat.

The melting-pan is an iron vessel, of various sizes, capable of holding from 28 lbs. to 3 cwt., heated by a steam jacket, or by a water bath. The soap is put into the pan by degrees, or what is, in the vernacular, called "rounds,"—that is, the thin slabs are placed perpendicularly all round the side of the pan; a few ounces of water are at the same time introduced, the steam of which assists the melting. The pan being covered up, in about half an hour the soap will have "run down." Another round is then introduced, and so continued every half-hour until the whole "melting" is finished. The more water a soap contains, the easier it is melted; hence a round of marine soap, or of new yellow soap, will run down in half the time that it requires for old soap.

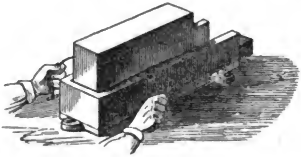
When different soaps are being remelted to form one kind when finished, the various sorts are to be put into the pan in alternate rounds, but each round must consist only of one kind, to insure uniformity of condition. As the soap melts, in order to mix it, and to break up lumps, &c., it is from time to time "*crutched.*" The "crutch" is an instrument or tool for stirring up the soap; its name is indicative of its form, a long handle with a short cross—an inverted ⊥ curved to fit the curve of the pan. When the soap is all melted, it is then colored, if so required, and then the perfume is added, the whole being thoroughly incorporated with the crutch.



Frame and Slab Gauge.

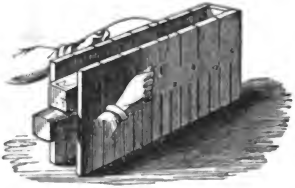
The soap is then turned into the "frame." The frame is a box made in sections, in order that it can be taken to pieces, so that the soap can be cut up when cold; the sections or "lifts" are frequently made of the width of the intended bar of soap.

Two or three days after the soap has been in the frame, it is cool enough to cut into slabs of the size of the lifts or sections of the frame; these slabs are set up edgeways to cool for a day or two more; it is then barred by means of a wire. The lifts of the frame regulate the width of the bars; the gauge regulates their breadth. The density of the soap being



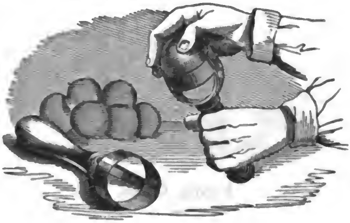
Barring Gauge.

pretty well known, the gauges are made so that the soap-cutter can cut up the bars either into fours, sixes, or eights; that is, either into squares of four, six, or eight to the pound weight. Latterly, various mechanical arrangements have been introduced for soap-cutting, which, in very large establishments, such as those at Marseilles, in France, are great economizers of labor; but in England the "wire" is still used.



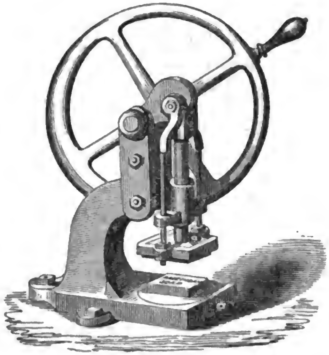
Squaring Gauge.

For making tablet shapes, the soap is first cut into squares, and is then put into a mould, and finally under a press—a modification of an ordinary die or coin press. Balls are cut by hand, with the

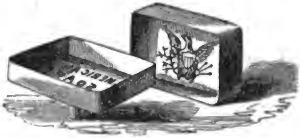


Soap Scoop.

aid of a little tool called a "scoop," made of brass or ivory, being, in fact, a ring-shaped knife. Balls are also made in the press with a mould of appropriate form. The grotesque form and fruit shape are also obtained by the press and appropriate moulds. The fruit-shaped soaps, after leaving the mould, are dipped into melted wax, and are then colored according to artificial fruit-makers' rules.



Soap Press.



Moulds.

The "variegated" colored soaps are produced by adding the various colors, such as smalt and vermilion, previously mixed with water, to the soap in a melted state; these colors are but slightly crutched in, hence the streaky appearance or party-color of the soap; this kind is also termed "marbled" soap.

Almond Soap.

This soap, by some persons "supposed" to be made of "sweet almond oil," and by others to be a mystic combination of sweet and bitter almonds, is in reality constituted thus:

Finest curd soap,	1 cwt.
" oil soap,	14 lbs.
" marine,	14 lbs.
Otto of almonds,	1½ lb.
" cloves,	¼ lb.
" caraway,	½ lb.

By the time that half the curd soap is melted, the marine soap is to be added; when this is well crutched, then add the oil soap, and finish with the remaining curd. When the whole is well melted, and just before turning it into the frame, crutch in the mixed perfume.

Some of the soap "houses" endeavored to use Mirabane, or artificial essence of almonds, for perfuming soap, it being far cheaper than the true otto of almonds; but the application has proved so unsatisfactory in practice, that it has been abandoned by Messrs. Gibbs, Pineau (of Paris), Gosnell, and others who used it.

Camphor Soap.

Curd soap,	28 lbs.
Otto of rosemary,	1¼ lb.
Camphor,	1¼ lb.

Reduce the camphor to powder by rubbing it in a mortar with the addition of an ounce or more of almond oil, then sift it. When the soap is melted and ready to turn out, add the camphor and rosemary, using the crutch for mixing.

HONEY SOAP.

Best yellow soap,	1 cwt.
Fig soft soap,	14 lbs.
Otto of citronella,	1½ lb.

WHITE WINDSOR SOAP.

Curd soap,	1 cwt.
Marine soap,	21 lbs.
Oil soap,	14 lbs.
Otto of caraway,	1½ lb.
" thyme, " rosemary, of each,	1½ lb.
" cassie, " cloves, of each,	¼ lb.

BROWN WINDSOR SOAP.

Curd soap,	¾ cwt.
Marine soap,	¼ cwt.
Yellow soap,	¼ cwt.
Oil soap,	¼ cwt.
Brown coloring (caramel),	½ pint.
Otto of caraway, " cloves, " thyme, " cassia, " petit grain, " French lavender, of each,	2 oz.

SAND SOAP.

Curd soap,	7 lbs.
Marine soap,	7 lbs.
Sifted silver sand,	28 lbs.
Otto of thyme, " cassia, " caraway, " French lavender, of each,	2 oz.

FULLER'S EARTH SOAP.

Curd soap,	10½ lbs.
Marine soap,	3½ lbs.
Fuller's earth (baked),	14 lbs.
Otto of French lavender,	2 oz.
" origanum,	1 oz.

The above forms are indicative of the method adopted for perfuming soaps while hot or melted.

All the very highly scented soaps are, however, perfumed cold, in order to avoid the loss of scent, twenty per cent. of perfume being evaporated by the hot process.

The variously named soaps, from the sublime "Sultana" to the ridiculous "Turtle's Marrow," we cannot of course be expected to notice; the reader may, however, rest assured that he has lost nothing by their omission.

The receipts given produce only the finest quality of the article named. Where cheap soaps are required, not much acumen is necessary to discern that by omitting the expensive perfumes, or lessening the quantity, the object desired is attained. Still lower qualities of scented soap are made by using greater proportions of yellow soap, and employing a very common curd, omitting the oil soap altogether.

SCENTING SOAPS HOT.

In the previous remarks, the methods explained of scenting soap involved the necessity of melting it. The high temperature of the soap under these circumstances involves the obvious loss of a great deal of perfume by evaporation. With very highly scented soaps, and with perfume of an expensive character, the loss of ottos is too great to be borne in a commercial sense; hence the adoption of the plan of

Scenting Soaps Cold.

This method is exceeding convenient and economical for scenting small batches, involving merely mechanical labor, the tools required being simply an ordinary carpenter's plane and a good marble mortar and lignum vitæ pestle.

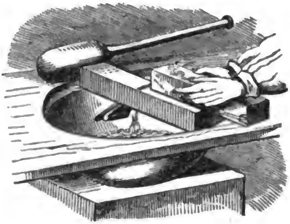
The woodwork of the plane must be fashioned at each end so that, when placed over the mortar, it remains firm and not easily moved by the parallel pressure of the soap against its projecting blade.

To commence operations, we take first 7 lbs., 14 lbs., or 21 lbs. of the bars of the soap that it is intended to perfume. The plane is now laid upside down across the top of the mortar.

Things being thus arranged, the whole of the soap is to be pushed across the plane until it is all reduced into fine shavings. Like the French "Charbonnier," who does not saw the wood, but woods the saw, so it will be perceived that in this process we do not plane the soap, but that we soap the plane, the shavings of which fall lightly into the mortar as quickly as produced.

Soap, as generally received from the maker, is in proper condition for thus working; but if it has been in stock any time it becomes too hard, and must have from one to three ounces of distilled water sprinkled in the shavings for every pound of soap employed, and must lie for at least twenty-four hours to be absorbed before the perfume is added.

When it is determined what size the cakes of soap are to be, what they are to sell for, and what it is intended they should cost, then the maker can measure out his perfume.



Soaping the Plane.

In general, soaps scented in this way retail from 4*s.* to 10*s.* per pound, bearing about 100 per cent. profit, which is not too much considering their limited sale. The soap being in a proper condition with regard to moisture, &c., is now to have the perfume well stirred into it. The pestle is then set to work for the process of incorporation. After a couple of hours of "warm exercise" the soap is generally expected to be free from streaks, and to be of one uniform consistence.

For perfuming soap in large portions by the cold process, instead of using the pestle and mortar as an incorporator, it is more convenient and economical to employ a mill similar in construction to a cake chocolate-mill, or a flake cocoa-mill; any mechanical apparatus that answers for mixing paste and crushing lumps will serve pretty well for blending soap together.

Before being put into the mill, the soap is to be reduced to shavings, and have the scent and color stirred in; after milling it, the flakes or ribands of soap are to be finally bound together by the pestle and mortar into one solid mass; it is then weighed out in quantities for the tablets required, and moulded by the hand into egg-shaped masses; each piece being left in this condition, separately laid in rows on a sheet of white paper, dries sufficiently in a day or so to be fit for the press, which is the same as that previously mentioned. It is usual, before placing the cakes of soap in the press, to dust them over with a little starch-powder, or else to very slightly oil the mould; either of these plans prevents the soap from adhering to the letters or embossed work of the mould—a condition essential for turning out a clean well-struck tablet.

The body of all the fine soaps mentioned below should consist of the finest and whitest curd soap, or of a soap previously melted and colored to the required shade, thus:

Rose-colored Soap is curd soap stained with vermilion ground in water, thoroughly incorporated when the soap is melted, and not very hot.

Green Soap is a mixture of palm-oil soap and curd soap, to which is added powdered smalt ground with water.

Blue Soap, curd soap colored with smalt.

Brown Soap, curd soap with caramel, *i. e.*, burnt sugar.

Mauve Soap is colored with aniline.

The intensity of color varies, of course, with the quantity of coloring.

Some kinds of soap become colored or tinted to a sufficient extent by the mere addition of the ottos used for scenting, such as "spermaceti soap," "lemon soap," &c., which becomes of a beautiful pale lemon color by the mere mixing of the perfume with the curd soap. (See Colors, Section XIX.)

Otto of Rose Soap.

(To retail at 10s. per pound.)

Curd soap (previously colored pink),	4½ lbs.
Otto of rose,	1 oz.
Spirituous extract of musk,	2 oz.
Otto of santal,	¼ oz.
" geranium,	¼ oz.

Mix the perfumes, stir them in the soap shavings, and beat together.

Tonquin Musk Soap.

Pale brown-colored curd soap,	5 lbs.
Grain musk,	¼ oz.
Otto of bergamot,	1 oz.

Rub the musk with the bergamot, then add it to the soap, and beat up. Should be made six months before sold.

Orange-Flower Soap.

Curd soap,	7 lbs.
Otto of neroli,	8½ oz.

Santal-wood Soap.

Curd soap,	7 lbs.
Otto of santal,	7 oz.
" bergamot,	2 oz.

Spermaceti Soap.

Curd soap,	14 lbs.
Otto of bergamot,	2½ lbs.
" lemon,	½ lb.

CITRON SOAP.

Curd soap,	6 lbs.
Otto of citron zeste,	¾ lb.
" verbena (lemon grass),	½ oz.
" bergamot,	4 oz.
" lemon,	2 oz.

One of the best of fancy soaps that is made.

FRANGIPANI SOAP.

Curd soap (previously colored pink),	7 lbs.
Civet,	¼ oz.
Otto of neroli,	½ oz.
" santal,	1½ oz.
" rose,	¼ oz.
" vitivert,	½ oz.

Rub the civet with the various ottos, mix, and beat in the usual manner.

PATCHOULY SOAP.

Curd soap,	4½ lbs.
Otto of patchouly,	1 oz.
" santal, " vitivert, } of each,	¼ oz.

SAPONACEOUS CREAM OF ALMONDS.

The preparation sold under this title is a potash soft soap of lard. It has a beautiful pearly appearance, and has met with extensive demand as a shaving soap. Being also used in the manufacture of EMULSINES, it is an article of no inconsiderable consumption by the perfumer. It is made thus:

Clarified lard,	7 lbs.
Potash lye (containing 26 per cent. of caustic potash),	3¾ lbs.
Rectified spirit,	3 oz.
Otto of almonds,	2 drachms.

Manipulation.—Melt the lard in a porcelain vessel by a salt-water bath, or by a steam heat under 15 lbs. pressure; then run in the lye *very slowly*, agitating the whole time; when about half the lye is in, the mixture begins to curdle; it will, however, become so firm that it cannot be stirred. The crême is then finished, but is not pearly; it will, however, assume that appearance by long trituration in a mortar, gradually adding the alcohol, in which the perfume has been dissolved.

SOAP POWDERS.

These preparations are sold sometimes as a dentifrice and at others for shaving; they are made by reducing the soap into shavings by a plane, then thoroughly drying them in a warm situation, afterwards grinding in a mill, then perfuming with any otto desired.

RYPOPHAGON SOAP.

Best yellow soap, } equal parts melted together.
Fig soft soap, }

Perfume with anise and citronella.

AMBROSIAL CREAM.

Color the grease very strongly with alkanet root, then proceed as for the manufacture of saponaceous cream. The cream colored in this way has a blue tint: when it is required of a purple color, we have merely to stain the white saponaceous cream with aniline to the shade desired. Perfume with otto of English peppermint.

NAPLES SHAVING SOAP.

This article is very much used, and as a consequence is in demand: it can be perfumed either with otto of thyme, lavender, peppermint, or rose; being very rank, it requires a great deal of perfume to cover its fishy odor, being made, as I believe, from fish oils and potash: but M. Faiszt states that it is made by saponifying mutton fat with lime, and then separating the fatty acids from the soap thus formed, by means of a mineral acid. These fatty acids are afterwards combined with ordinary caustic potash to produce the Naples soap.

TRANSPARENT SOFT SOAP.

Solution caustic potash ("London Pharmacopœia"),	6 lbs.
Olive oil,	1 lb.

Perfume to taste.

Before commencing to make the soap, reduce the potash lye to one-half its bulk by continued boiling. Now proceed as for the manufacture of saponaceous cream. After standing a few days, pour off the waste liquor.

SOFT WATER ELIXIR.

(For softening hard water.)

Spirits of wine,	1 gallon.
Orange-flower water,	4 pints.
Marine soap,	7 lbs.

Color with a few drops of aniline. Shave up the soap and put it into the water; make it hot, and the soap will dissolve; then add the spirit.

A tablespoonful of this elixir put into the bottom of a basin will completely "soften" the water that is put into it for washing.

TRANSPARENT HARD SOAP.

Reduce the soap to shavings, and dry them as much as possible, then dissolve in alcohol, using as little spirit as will effect the solution, then color and perfume as desired; and cast the product in appropriate moulds; finally dry in a warm situation.

Until the legislature allows spirit to be used, for manufacturing purposes, free of duty, we cannot compete with our neighbors in this article; the methylated spirit has such an abominable odor that it cannot be used for making scented soaps for the toilet.

MEDICATED SOAPS.

In 1850 I began making a series of medicated soaps, such as SULPHUR SOAP, IODINE SOAP, BROMINE SOAP, CREASOTE SOAP, MERCURIAL SOAP, CROTON OIL SOAP, and many others. These soaps are prepared by adding the medicant to curd soap, and then making in a tablet form for use. For sulphur soap, the curd soap may be melted, and flowers of sulphur added while the soap is in a soft condition. For antimony soap and mercurial soap, the low oxides of the metals employed may also be mixed in the curd soap in a melted state. Iodine, bromine, creasote `soap, and others containing very volatile substances, are best prepared cold by shaving up the curd soap in a mortar, and mixing the medicant with it by long beating.

In certain cutaneous diseases the author has reason to believe that they will prove of infinite service as auxiliaries to the general treatment. It is obvious that the absorbent vessels of the skin are very active during the lavatory process; such soap must not, therefore, be used, except by the special advice of a medical man. Probably these soaps will be found useful for internal application. The precedent of the use of Castile soap (containing oxide of iron) renders it likely that such soaps will find a place in the pharmacopœias. The discovery of the solubility, under certain conditions, of the active alkaloids, quinine, morphia, &c., in oil, by Mr. W. Bastick, greatly favors the supposition of analogous compounds in soap.

Some forty or fifty years ago, there were several kinds of soap imported, but which nowadays are quite unknown, such as Joppa soap, Smyrna soap, Jerusalem soap, Genoa soap, Alicant soap, &c., nearly all of which, however, were made of oil as a base.

JUNIPER TAR SOAP.

This soap is made from the tar of the wood of the *Juniperus communis*, by dissolving it in a fixed vegetable oil, such as almond or olive oil, or in fine tallow, and forming a soap by means of a weak soda lye after the customary manner. This yields a moderately firm and clear soap, which may be readily used by application to parts affected with eruptions, at night, mixed with a little water, and carefully washed off the following morning. This soap has lately been much used for eruptive disorders, particularly on the Continent, and with varying degrees of success. It is thought that the efficient element in its composition is a rather less impure hydrocarburet than that known in Paris under the name *huile de cade*. On account of its ready miscibility with water, it possesses great advantage over the common tar ointment.

SOAPSTONE OF MYLOS.

This is an important article of commerce in Turkey and Russia, where it is used as soap, has been analyzed by M. Landerer, the result being—silex, 63; alumina, 23; water, 12; and sesquioxide of iron, 1.25. This mineral is of a grayish color, and has schistose fracture. It can be cut into shavings, and adheres a little to the tongue; softens in water, dissolving gradually in it; and afterwards becomes white and greasy to the touch. It becomes gray again after desiccation.

Soap Plants.

There are several plants the juices of which are employed for washing, but at present they have no practical application to the toilet, though doubtless they will have so soon as we can obtain a regular supply.

SECTION XI.

EMULSINES.

From soaps proper we now pass to those compounds used as substitutes for soap, which are classed together under one general title as above, for the reason that all cosmetics herein embraced have the property of forming emulsions (milks) with water.

Chemically considered, they are an exceedingly interesting class of compounds, and are well worthy of study. Being prone to decomposition, as might be expected from their composition, they should be made only in small portions, or at least, only in quantities to meet a ready sale.

While in stock they should be kept as cool as possible, and free from a damp atmosphere.

Amandine.

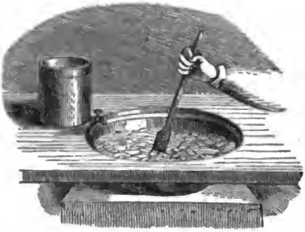
Fine almond oil,	7 lbs.
Simple syrup,*	4 oz.
White soft soap, or saponaceous cream, *i. e.*, Crême d'Amande,	1 oz.
Otto of almonds,	1 oz.
" bergamot,	1 oz.
" cloves,	½ oz.

Rub the syrup with the soft soap until the mixture is homogeneous, then rub in the oil by degrees; the perfume having been previously mixed with the oil.

---

* Simple syrup consists of 3 lbs. of loaf sugar, boiled for a minute in 1 pint imperial of distilled water.

In the manufacture of amandine (and olivine) the difficulty is to get in the quantity of oil indicated, without which it does not assume that transparent jelly appearance which good amandine should have. To attain this end, the oil is put into "a runner," that is, a tin or glass vessel, at the bottom of which is a small faucet and spigot, or tap. The oil being put into this vessel is allowed to run slowly into the mortar in which the amandine is being made, just as fast as the maker finds that he can incorporate it with the paste of soap and syrup; and so long as this takes place, the result will always have a jelly texture to the hand. If, however, the oil be put into the mortar quicker than the workman can blend it with the paste, then the paste becomes "oiled," and may be considered as "done for," unless, indeed, the whole process be gone through again, starting off with fresh syrup and soap, using up the greasy mass as if it were pure oil. This liability to "go off" increases as the amandine nears the finish; hence extra caution and plenty of "elbow grease" must be used during the addition of the last two pounds of oil. If the



Oil-Runner in Emulsion Process.

oil be not perfectly fresh, or if the temperature of the atmosphere be above the average of summer heat, it will be almost impossible to get the whole of the oil given in the formula into combination; when the mass becomes bright and of a crystalline lustre, it will be well to stop the further addition of oil to it.

This and similar compounds should be potted as quickly as made, and the lids of the pots banded either with strips of tin-foil or paper, to exclude air. When the amandine is filled into the jars, the top or face of it is marked or ornamented with a tool made to the size of half the diameter of the interior of the jar, in a similar way to a saw; a piece of lead or tortoise-shell, being serrated with an angular file, or piece of an old saw, will do very well; place the marker on the amandine, and turn the jar gently round.

OLIVINE.

Gum acacia, in powder,		2 oz.
Honey,		6 oz.
Yolk of eggs,	in number	5
White soft soap,		3 oz.
Olive oil,		2 lbs.
Green oil,		1 oz.
Otto of bergamot,		1 oz.
" lemon,		1 oz.
" cloves,		½ oz.
" thyme and cassie, each,		½ drachm.

Rub the gum and honey together until incorporated, then add the soap and egg. Having mixed the green oil and perfumes with the olive oil, the mixture is to be placed in the runner, and the process followed exactly as indicated for amandine.

HONEY AND ALMOND PASTE.

Bitter almonds, blanched and ground,	½ lb.
Honey,	1 lb.
Yolk of eggs, in number	8
Almond oil,	1 lb.
Otto of bergamot,	¼ oz.
" cloves,	¼ oz.

Rub the eggs and honey together first, then gradually add the oil, and finally the ground almonds and the perfume.

ALMOND PASTE.

Bitter almonds, blanched and ground,	1½ lb.
Rose-water,	1½ pint.
Alcohol (60 over proof),	16 oz.
Otto of bergamot,	3 oz.

Place the ground almonds and one pint of the rose-water into a stewpan: with a slow and steady heat, cook the almonds until their granular texture assumes a pasty form, constantly stirring the mixture during the whole time, otherwise the almonds quickly burn to the bottom of the pan, and impart to the whole an empyreumatic odor.

The large quantity of otto of almond which is volatilized during the process, renders it essential that the operator should avoid the vapor as much as possible.

When the almonds are nearly cooked, the remaining water is to be added; finally, the paste is put into a mortar, and well rubbed with the pestle; then the perfume and spirit are added. Before potting this paste, as well as honey paste, it should be passed through a medium fine sieve, to insure uniformity of texture, especially as almonds do not grind kindly.

Other pastes, such as *Pâte de Pistache*, *Pâte de Cocos*, *Pâte de Guimauve*, are prepared in so similar a manner to the above, that it is unnecessary to say more about them here, than that they must not be confounded with preparations bearing a similar name made by confectioners.

ALMOND MEAL.

Ground almonds,	1 lb.
Wheat flour,	1 lb.
Orris-root powder,	¼ lb.
Otto of lemon,	½ oz.
" almonds,	¼ drachm.

PISTACHIO NUT MEAL, OR ANY OTHER NUT.

Pistachio nuts (decorticated as almonds are bleached),	1 lb.
Orris powder,	1 lb.
Otto of neroli,	1 drachm.
" lemons,	½ oz.

Other meals, such as perfumed oatmeal, perfumed bran, &c., are occasionally in demand, and are prepared as the foregoing.

All the preceding preparations are used at the wash-hand stand as substitutes for soap, and to "render the skin pliant, soft, and fair!"

EMULSIN AU JASMIN.

Saponaceous cream,	1 oz.
Simple syrup,	1½ oz.
Almond oil,	1 lb.
Best jasmine oil,	½ lb.

EMULSIN A LA VIOLETTE.

Saponaceous cream,	1 oz.
Syrup of violets,	1½ oz.
Best violet oil,	1½ lb.

Emulsin of other odors can be prepared with tuberose, rose, or cassie (acacia) oils—oils that have been perfumed by the enfleurage or maceration process.

For the methods of mixing the ingredients, see "Amandine," p. 283.

On account of the high price of the French oils, these preparations are expensive, but they are undoubtedly the most exquisite of cosmetics.

GLYCERINE JELLY.

White soft soap,	4 oz.
Pure glycerine,	6 oz.
Almond oil,	3 lbs. in summer. 4 lbs. in winter.
Otto of thyme,	2 drachms.

Mix the soap and glycerine in a mortar, then gradually add the oil in the same way as for amandine.

SECTION XII.

MILKS, OR EMULSIONS.

In the perfumery trade, few articles meet with a more ready sale than that class of cosmetics denominated milks. It has long been known that nearly all the seeds of plants which are called nuts, when decorticated and freed from their pellicle, on being reduced to a pulpy mass, and rubbed with about four times their weight of water, produce a fluid which has every analogy to cow's milk. The milky appearance of these emulsions is due to the minute mechanical division of the oil derived from the nuts being diffused through the water. All these emulsions possess great chemical interest on account of their rapid decomposition, and the products emanating from their fermentation, especially that made with sweet almonds and pistachios (*Pistachia vera*).

In the manufacture of various milks for sale, careful manipulation is of the utmost importance, otherwise these emulsions "will not keep;" hence more loss than profit.

"Transformation takes place in the elements of vegetable caseine (existing in seeds) from *the very moment* that sweet almonds are converted into almond-milk." (Liebig.) This accounts for the difficulty many persons find in making milk of almonds that does not spontaneously divide, a day or so after its manufacture.

Pure water is "the cosmetic" *par excellence;* but water, though all-sufficient during perfect health, is mostly insufficient for the inhabitants of towns, because their health is rarely perfect, assailed as it is by business cares, heated rooms, ill-ventilated public buildings and places of amusement, and by a sulphurous atmosphere, charged with the products of combustion of gas and coal. It is therefore necessary that Art should come to the aid of Nature, from whom we are too apt to demand more than she can give. In the open air, no less than within doors, in walking, at balls or parties, at places of public resort, in watching, and various kinds of occupation, the skin of the face becomes charged with impurities which plain water will not remove. To restore the skin to its freshness, to correct the evils of town life, and to impart to the skin the bloom of health, no cosmetic can approach Emulsion of Roses. It cleanses, softens, and brightens the skin, yet is as harmless as an April shower on the verdure of spring. In the manufacture of Emulsion or Milk of Roses careful manipulation is of the utmost importance.

MILK OF ROSES.

Valentia almonds (blanched),	½ lb.
Rose-water,	1 quart.
Alcohol (60 over proof),	¼ pint.
Otto of rose,	1 drachm.
White wax, spermaceti, oil soap, each,	½ oz.

Manipulation.—Shave up the soap, and place it in a vessel that can be heated by steam or water bath; add to it two or three ounces of rose-water. When the soap is perfectly melted, add the wax and spermaceti, without dividing them more than is necessary to obtain the correct weight; this insures their melting slowly, and allows time for their partial saponification by the fluid soap; occasional stirring is necessary. While this is going on, blanch the almonds, carefully excluding every particle that is in the least way damaged. Now proceed to beat up the almonds in a scrupulously clean mortar, allowing the rose-water to trickle into the mass by degrees; the runner, as used for the oil in the manufacture of olivine (see page 284), is very convenient for this purpose. When the emulsion of almonds is thus finished, it is to be strained, *without pressure*, through clean *washed* muslin (*new* muslin often contains starch, flour, gum, or dextrine).

The previously-formed saponaceous mixture is now to be placed in the mortar, and the ready formed emulsion in the runner; the soapy compound and the emulsion are then carefully blended together. As the last of the emulsion runs into the mortar, the spirit in which the otto of roses has been dissolved, is to take its place, and to be *gradually* trickled into the other ingredients. A too sudden addition of the spirit frequently coagulates the milk and causes it to be curdled; as it is, the temperature of the mixture rises, and every means must be taken to keep it down; the constant agitation and cold mortar effecting that object pretty well. Finally, the now formed milk of roses is to be strained.

The almond residue may be washed with a few ounces of fresh rose-water, in order to prevent any loss in bulk to the whole given quantity. The newly formed milk should be placed into a bottle having a tap in it about a quarter of an inch from the bottom. After standing perfectly quiet for twenty-four hours it is fit to bottle. All the above precautions being taken, the milk of roses will keep any time without precipitate or creamy supernatation. These directions apply to all other forms of milk now given.

MILK OF ALMONDS.

Bitter almonds (blanched),	10 oz.
Distilled (or rose) water,	1 quart.
Alcohol (60 over proof),	¾ pint.*
Otto of almonds,	¼ drachm.
" bergamot,	2 drachms.
Wax, spermaceti, almond oil, curd soap, } each,	½ oz.

MILK OF ELDER.

Sweet almonds,	4 oz.
Elder-flower water,	1 pint.
Alcohol (60 over proof),	8 oz.
Oil of elder-flowers, prepared by maceration,	½ oz.
Wax, sperm, soap, each,	½ oz.

MILK OF DANDELION.

Sweet almonds,	4 oz.
Rose-water,	1 pint.
Expressed juice of dandelion root,	1 oz.
Esprit de tubereuse,	8 oz.
Green oil, wax, curd soap, each,	½ oz.

Let the juice of the dandelion be perfectly fresh pressed; as it is in itself an emulsion, it may be put into the mortar after the almonds are broken up, and stirred with the water and spirit in the usual manner.

---

* The imperial measure only is recognized among perfumers.

MILK OF CUCUMBER.

Sweet almonds,	4 oz.
Expressed juice of cucumbers,	1 pint.
Spirit (60 over proof),	8 oz.
Essence of cucumbers,	¼ pint.
Green oil, wax, curd soap, each,	¼ oz.

Raise the juice of the cucumbers to the boiling-point for half a minute, cool it as quickly as possible, then strain through fine muslin: proceed to manipulate in the usual manner.

MILK OF PISTACHIO NUTS.

Pistachio nuts,	3 oz.
Orange-flower water,	3¼ pints.
Esprit neroli,	¾ pint.
Palm soap, green oil, wax, spermaceti, each,	1 oz.

LAIT VIRGINAL.

Rose-water,	1 quart.
Tincture Tolu,	½ oz.

Add the water very slowly to the tincture; by so doing an opalescent milky fluid is produced, which will retain its consistency for many years; by reversing this operation, pouring the tincture into the water, a cloudy precipitate of the resinous matter ensues, which does not again become readily suspended in the water.

EXTRACT OF ELDER FLOWERS.

Elder-flower water,	1 quart.
Tincture benzoin,	1 oz.

Manipulate as for virgin's milk.

Similar compounds may, of course, be made with orange flower and other waters.

Glycerine Lotion.

Orange-flower water,	1 gallon.
Glycerine,	8 oz.
Borax,	1 oz.

Dr. Startin states that this is an excellent cosmetic.

Pure glycerine is now extensively used as a remedy for chapped lips, and a very useful material it is; however, being "sticky," it is very unpleasant to many people, who give preference to the glycerine jelly.

Pure glycerine is also used as a sort of bandoline, and for making the hair glossy. Scented with otto of geranium or rose, and tinted with aniline, it is now sold under the name of mauve oil.

SECTION XIII.

COLD CREAM.

Galen, the celebrated physician of Pergamus, in Asia, but who distinguished himself at Athens, Alexandria, and Rome, about 1700 years ago, was the inventor of that peculiar unguent, a mixture of grease and water, which is now distinguished as cold cream in perfumery, and as *Ceratum Galeni* in pharmacy.

The modern formula for cold cream is, however, quite a different thing to that given in the works of Galen, in point of odor and quality, although substantially the same,—grease and water. In perfumery there are several kinds of cold cream, distinguished by their odor, such as that of camphor, almond, violet, roses, &c. Cold cream, as made by English perfumers, bears a high reputation, not only at home, but throughout Europe; the quantity exported, and which can only be reckoned by jars in hundreds of dozens, and the repeated announcements that may be seen in the shops on the Continent, in Germany, France, and Italy, of "Cold Crême Anglaise," is good proof of the estimation in which it is held.

Rose Cold Cream.

Almond oil,	1 lb.
Rose-water,	1 lb.
White wax, Spermaceti, } each,	1 oz.
Otto of roses,	½ drachm.

Manipulation.—Into a well-glazed thick porcelain vessel, which should be deep in preference to shallow, and capable of holding twice the quantity of cream that is to be made, place the wax and sperm; now put the jar into a boiling bath of water; when these materials are melted, add the oil, and again subject the whole to heat until the flocks of wax and sperm are liquefied; now remove the jar and contents, and set it under a runner containing the rose-water: the runner may be a tin can, with a small tap at the bottom, the same as used for the manufacture of milk of roses. A stirrer must be provided, made of lancewood, flat, and perforated with holes the size of a sixpence, resembling in form a large palette-knife. As soon as the rose-water is set running, the cream must be kept agitated until the whole of the water has passed into it; now and then the flow of water must be stopped, and the cream which sets at the sides of the jar scraped down, and incorporated with that which remains fluid. In winter-time, it is necessary to slightly warm the rose-water, otherwise the cream sets before it is beaten enough. When the whole of the water has been incorporated, the cream will be cool enough to pour into the jars for sale; at that time the otto of rose is to be added. The reason for the perfume being put in at the last moment is obvious,—the heat and subsequent agitation would cause unnecessary loss by evaporation. Cold cream made in this way sets quite firmly in the jars into which it is poured, and retains a "face" resembling pure wax, although one half is water retained in the interstices of the cream. When the pots are well glazed, it will keep good for one or two years. If desired for exportation to the East or West Indies, it should always be sent out in stoppered bottles.

COLD CREAM OF ALMONDS

Is prepared precisely as the above; but in the place of otto of roses, otto of almonds is used.

VIOLET COLD CREAM.

Huile violette,	1 lb.
Violet-water,	1 lb.
Wax and spermaceti, each,	1 oz.
Otto of almonds,	5 drops.

This is an elegant preparation, and generally admired.

TUBEREUSE, JASMINE, AND FLEUR D'ORANGE COLD CREAMS,

Are prepared in a similar manner to the above violet; they are all very exquisite preparations, but as they *cost* more than rose cold cream, perfumers are not much inclined to introduce them in lieu of the latter.

CAMPHOR COLD CREAM (otherwise Camphor Ice).

Almond oil,	1 lb.
Rose-water,	1 lb.
Wax and spermaceti,	1 oz.
Camphor,	2 oz.
Otto of rosemary,	1 drachm.

Melt the camphor, wax, and sperm, in the oil, then manipulate as for cold cream of roses.

CUCUMBER COLD CREAM.

Almond oil,	1 lb.
Green oil,	1 oz.
Juice of cucumbers,	1 lb.
Wax and sperm, each,	1 oz.
Essence of cucumber,	2 oz.

If in youth we were more careful, it is certain that as we progress onward in the journey of life, the exception would be to see a person with the skin dull at an age when it ought to have the most youthful freshness. The trouble of preservation is far more simple, agreeable, and effectual, than that of restoration, to which it is necessary to have recourse in order to repair the wrongs of a careless negligence. Freckles are considered by the majority as inimical to beauty; we, however, are of the minority, and rather admire them. They are the result of the intermingling of race, of the dark blood of the South with the fair Saxon. It is positive that they indicate exuberant health—and what is more beautiful than the hue of health? As the summer advances, freckles appear. If the skin is exposed to the sun, it is darkened like a cherry or a peach that is ripening. The effect of the sun upon a delicate skin is very rapid, and it becomes sunburnt, which in many instances produces inconvenience, attended with slight pain. Of the various cosmetics invented for preventing and remedying this evil, Cucumber Cream bears a just reputation.

The cucumber-juice is readily obtained by subjecting the fruit to pressure in the ordinary tincture press. It must be raised to a temperature high enough to coagulate the small portion of albumen which it contains, and then strained through fine linen. As the heat is detrimental to the odor, on account of the great volatility of the otto of cucumber, the following method may be adopted with advantage:

Slice the fruit very fine with a cucumber-cutter, and place them in the oil; after remaining together for twenty-four hours, repeat the operation, using fresh fruit in the strained oil; no warmth is necessary, or, at most, not more than a summer heat; then proceed to make the cold cream in the usual manner, using the almond oil thus odorized, the rose-water, and other ingredients in the regular way, perfuming with essence of cucumber.

Another and commoner preparation of cucumber is found among the Parisians, which is lard simply scented with the juice from the fruit, thus: The lard is liquefied by heat in a vessel subject to a water-bath; the cucumber-juice is then stirred well into it; the vessel containing the ingredients is now placed in a quiet situation to cool. The lard will rise to the surface, and when cold must be removed from the fluid juice; the same manipulation being repeated as often as required, according to the strength of odor of the fruit desired in the grease.

POMADE OF CUCUMBER.

Benzoinated lard, ...	6 lbs.
Spermaceti, ...	2 lbs.
Spirit of cucumber, ...	1 lb.

Melt the spermaceti with the lard, then keep it constantly in motion while it cools; now beat the grease in a mortar, gradually adding the essence of cucumbers; continue to beat the whole until the spirit is evaporated, and the pomade is beautifully white. See CUCUMBER, page 95.

Apply it by rubbing a little all over the skin at bedtime, and also to place a piece about the size of a filbert on the sponge or towel with the soap used in washing. A small piece may also be rubbed over the skin with advantage before going into the sunshine, as when health and enjoyment is sought on the sea-shore.

Melons and other similar fruit will scent grease treated in the same way.

Pomade Divine.

Among the thousand and one quack nostrums, pomade divine, like James's powder, has obtained a reputation far above the most sanguine expectations of its concocters. This article strictly belongs to the druggist, being sold as a remedial agent; nevertheless what *is* sold is almost always vended by the perfumer. It is prepared thus:

Spermaceti,	¼ lb.
Lard,	½ lb.
Almond oil,	¾ lb.
Gum benzoin,	¼ lb.
Vanilla beans,	1½ oz.

Digest the whole in a vessel heated by a water bath at a temperature not exceeding 90° C. After five or six hours it is fit to strain, and may be poured into the bottles for sale.

(Must be *stamped*, if its medicinal qualities are stated.)

Almond Balls.

Purified suet,	1 lb.
White wax,	½ lb.
Otto of almonds,	1 drachm.
" cloves,	¼ drachm.

Camphor Balls.

Purified suet,	1 lb.
White wax,	¼ lb.
Camphor,	¼ lb.
Otto of French lavender or rosemary,	½ oz.

Both the above articles are sold, either white or colored with alkanet root. When thoroughly melted, the material is cast in a mould; ounce gallipots with smooth bottoms answer very well for casting in. Some vendors use only large pill-boxes.

CAMPHOR PASTE.

Almond oil,	½ lb.
Purified lard,	¼ lb.
Wax, spermaceti, and camphor, each,	1 oz.

Beat up the ingredients as they cool, before pouring out.

GLYCERINE BALSAM.

White wax and spermaceti, each,	1 oz.
Almond oil,	½ lb.
Glycerine,	2 oz.
Otto of roses,	¼ drachm.

We cannot here discuss the remedial action of any of the above preparations; in giving the formulæ, it is enough for us that they are in demand by the public.

FINE ROSE LIP-SALVE.

Almond oil,	½ lb.
Spermaceti and wax, each,	2 oz.
Alkanet root,	2 oz.
Otto of roses,	¼ oz.

Place the wax, sperm, oil, and alkanet root into a vessel heated by steam or water-bath; after the materials are melted, they must digest on the alkanet, to extract its color, for at least four or five hours; finally, strain through fine muslin, then add the perfume just before it cools.

WHITE LIP-SALVE.

Almond oil,	¼ lb.
Wax and spermaceti, each,	1 oz.
Otto of almonds,.	½ drachm.
" geranium,	¼ drachm.

After lip-salve is poured into the pots and become cold, a red-hot iron must be held over it for a minute or so, in order that the heat radiated from the iron may melt the surface of the salve and give it an even face.

CHERRY LIP-SALVE.

This is made in the same way as the fine rose lip-salve, with this difference,—that the scent consists of one drachm each of otto of bay and otto of almonds.

COMMON LIP-SALVE

Is made simply of equal parts of lard and suet, colored with alkanet root, and perfumed with an ounce of bergamot to every pound of salve.

SECTION XIV.

POMADES AND OILS.

According to ancient writers, unguent, pomatum, ointment are synonymous titles for medicated and perfumed greases. Among Biblical interpreters, the significant word is mostly rendered "ointment;" thus we have in Prov. 27:9, "Ointment and perfume rejoice the heart;" in Eccles. 9:8, "Let thy head lack no ointment." "The sons of the priests made the ointments of the spices" (1 Chron. 9:30); "Hezekiah was glad, and showed them his treasures, his spices, and the precious ointment" (Isa. 39:2).

Oiling and greasing the hair is a custom pretty nearly universal among the people of all civilized nations. There are oil-glands on the scalp, but their power of secretion is very slight, except in a few rare instances; in these cases the hair is said to be naturally "moist" and soft. The general rule is, that the hair grows harsh and "dry" for the lack of natural oily secretion, hence the instinctive application of an artificial oil, a practice hallowed by its ancient custom, and sanctioned as "necessary," from the Court beauty of St. James's to the belle of equatorial Africa. M. Du Chaillu, speaking of the use of njavi oil by the natives of Goumbi, says:

> They mix the njavi oil with a kind of odoriferous powder called *yombo*, and this mixture is then applied in great quantities upon their wool (*i. e.*, hair). They think it gives out a pleasant fragrance, but I differ from them.

Now, oiling the hair, besides making it glossy and soft, has the infinite benefit of rendering it "uninhabitable;" a consideration too often neglected in schools, and similar institutions.

The name of pomatum is derived from *pomum*, an apple, because it was originally made by macerating over-ripe apples in grease.

If an apple be stuck all over with spice, such as cloves, then exposed to the air for a few days, and afterwards macerated in purified melted lard, or any other fatty matter, the grease will become perfumed. Repeating the operation with the same grease several times produces real "pomatum."

According to a recipe published more than a century ago, the form given is:

Kid's grease, an orange sliced, pippins, a glass of rose-water, and half a glass of white wine, boiled and strained, and at last sprinkled with oil of sweet almonds.

The author, Dr. Quincy, observes, that "the apple is of no significance at all in the recipe," and, like many authors of the present day, concludes that the reader is as well acquainted with the subject as the writer, and therefore considers that the weights or bulk of the materials in his recipe are likewise of no significance.

Perfumers, acting by experience or Dr. Quincy's advice, pay no regard to the apples in the preparation of pomatum, but make it by perfuming lard or suet, or a mixture of wax, spermaceti, and oil, or some of them or all blended, to produce a particular result, according to the name that it bears.

The most important thing to consider in the manufacture of pomatum, &c., is to start off with a *perfectly inodorous* grease, whatever that grease may be.

Inodorous lard is obtained thus:

Take, say, 28 lbs. of *perfectly fresh* lard, place it in a well-glazed vessel, that can be submitted to the heat of a boiling salt-water bath, or by steam under a slight pressure; when the lard is melted, add to it one ounce of powdered alum and two ounces of table salt; maintain the heat for some time, in fact, till a scum rises, consisting in a great measure of coagulated proteine compounds, membrane, &c., which must be skimmed off; when the liquid grease appears of a uniform nature, it is allowed to grow cold.

The lard is now to be washed. This is done in small portions at a time, and is a work of much labor, which, however, is amply repaid by the result. About a pound of the grease is now placed on a slate slab, a little on the incline, a supply of good water being set to trickle over it; the surface of the grease is then constantly renewed by an operative working a muller over it, precisely as a color-maker grinds paints in oil. In this way the water removes any traces of alum or salt, also the last traces of nitrogenous matter. Finally, the grease, when the whole is washed in this way, is remelted, the heat being maintained enough to drive off any adhering water. When cold it is finished.

Although purifying grease in this way is troublesome, and takes a good deal of time, yet, unless done so, it is totally unfit for perfuming with flowers, because a bad grease will cost more in perfume to cover its *mal odeur* than the expense of thus deodorizing it. Moreover, if lard be used that "smells of the pig," it is next to impossible to impart to it any delicate odor; and if strongly perfumed by the addition of ottos, the unpurified grease will not keep, but quickly become rancid. Under any circumstances, therefore, grease that is not *perfectly inodorous* is a very expensive material to use in the manufacture of pomades.

In the South and flower-growing countries, where the fine pomades are made by ENFLEURAGE, or by

MACERATION, the purification of grease for the purpose of these manufactures is of sufficient importance to become a separate trade.

The purification of beef and mutton suet is in a great measure the same as that for lard: the greater solidity of suets requires a mechanical arrangement for washing them of a more powerful nature than can be applied by hand labor. Mr. Ewen, of Garlick Hill, who is an extensive lard and fat-purifier in London, employs a stone roller rotating upon a circular slab; motion is given to the roller by an axle which passes through the centre of the slab, or rather stone bed, upon which the suet is placed; being higher in the centre than at the sides, the stream of water flows away after it has once passed over the suet; in other respects the treatment is the same as for lard. These greases used by perfumers have a general title of "body," tantamount to the French nomenclature of *corps;* thus we have pomades of hard corps (suet), pomades of soft corps (lard). When drawing *extraits* from the enfleuraged grease, such as extrait de violette, jasmin, the pomades of hard corps are to be preferred; but when scented pomade is to be used in the fabrication of unguents for the hair, pomades of soft corps are the most useful.

The following process of purifying grease prior to enfleurage has been expressly written for this work by M. Auguste Bermond, of Nice:

EPURATION DES GRAISSES.

Choisissez les graisses toujours les plus fraîches, en ôtant toutes les fibres et petites peaux qui peuvent les corrompre.

Pour cinquante kilogs. de graisse.—Vous la coupez par morceaux, ensuite vous la pilez dans un mortier, en pierre ou marbre

De suite qu'elle est bien écrasée il faut la laver, et la faire dégorger dans de l'eau fraîche. Il faut répéter le lavage au moins six fois, jusqu'à ce que toute l'eau soit claire comme quand vous la mettez. Cette opération terminée, faites fondre la graisse, en y ajoutant cent grammes d'alun de glace pulvérisée, et une poignée de sel marin; faites bouillir, et écumez quelques sécondes. Après, passez la graisse fondue à travers d'un linge pas trop serré, sans trop presser les crétons, soit le marc, que vous réservez pour vos pommades communes. Vous laissez reposer la graisse dans un grand récipient environ deux heures; ensuite, vous retirez votre graisse au clair sans y laisser d'eau.

Vous remettez après la graisse fondue à feu nu, avec trois ou quatre litres d'eau de rose, et cent cinquante grammes de benjoin bien en poudre; vous faites bouillir petit à petit, en retirant sans cesse l'écume qui fait la graisse, quand après une heure environ vous vous apercevez qu'il ne sort plus d'écume, vous retirez tout le feu, vous laissez reposer le mélange quatre ou cinq heures; ensuite vous tirez au clair dans des jarres ou couvettes en fer-blanc, et l'opération est terminée. Laissez toujours quelque livres de corps au fond, dans la crainte qu'il ne passe pas d'eau; cette matière vous servira à d'autres emplois. Pour épurer la graisse de bœuf, vous faites la même chose.

Pour éviter que votre corps avec les chaleurs ne tourne pas au gras, vous mettrez six cents kilogs. de graisse de porc, vingt-cinq kilogs. de graisse de bœuf. En été, on met moitié par moitié.

Which may be briefly rendered:

Take one hundredweight of perfectly fresh grease, either of lard or beef suet; cut the grease into small pieces, and pound it well in a mortar; when it is well crushed, wash it with water repeatedly, so long, in fact, until the water is as clear after withdrawing the grease as before it was put in. The grease has now to be melted over a slow fire, adding thereto about three ounces of crystallized alum in powder, and a handful of sea salt (common salt); now let the grease boil, but allow it to bubble for a few seconds only; then strain the grease through fine linen, into a deep pan, and allow it to stand, to clear itself from all impurities, for about two hours. The clear grease is then again to be put into the pan, over a bright fire, adding thereto about three or four quarts of rose-water, and about five ounces of powdered gum benzoïn; it is allowed to boil gently, and all scum that rises is to be removed, until it ceases to

be produced; finally the grease is put into deep pans, and when cold taken carefully off the sedimentary water; it is then fit for use, and may be kept for an indefinite period, without change or turning rancid.

It will be observed that the principal feature in this process is the use of the benzoin.

Dr. Redwood has recently directed the attention of chemists* to the fact that certain ointments, particularly zinc ointment, will not become rancid, if a little gum benzoin, or benzoic acid, is added to it when made; that such is the case, there is little doubt; for it has been remarked that the prepared fat used by the flower farmers in the process of enfleurage will remain sweet for some years, provided that it be digested for a time over gum benzoin, in the process of its purification,—a practice that has been generally worked for this century, at Grasse, Cannes, and Nice. It therefore becomes only a question of experiment, to determine whether benzoin be a true antiseptic to all fatty bodies.

The method of perfuming grease by the direct process with flowers having already been described, under the respective names of the flowers that impart the odor thereto, it remains now only to describe those compounds that are made from them, together with such incidental matter connected with this branch of perfumery as has not been previously mentioned.

OIL OF BEN OR BEHEN.

Undoubtedly this is the finest fat oil which a perfumer could use; it is nearly free from color, is taste-less and inodorous, it remains for a lengthened period free from rancidity, indeed, some authors say, it "never" becomes rancid,—a sample which I have placed in a position in which all other oils would be spoilt in a year is still perfectly sweet though nearly six years old. At one period the oil of ben constituted a valuable branch of commerce with the East, but excessive imposts and extensive adulterations, threw it out of the market.

---

* Pharmaceutical Journal, vol. xiv, No. 5.

In the hope of restoring so valuable an article to its merited position, I am induced thus to speak of a commodity, though none of it can at the present time be commercially obtained. The oil is yielded by expression from the seeds of the *Moringa Pterygosperma* or oil of behen tree, now naturalized in the West Indies. The seeds are said to yield twenty-five per cent. of oil, which at a price say of five guineas a hundredweight—the present market value of sweet almond oil—would surely offer sufficient mercantile inducement for its production; but there is every reason to believe that it would realize never less than £10 per cwt. in the open market. For making cold cream and all kinds of unguents, it would prove invaluable and without a competitor. Supposing that it would "not pay" its producers to ship it in its natural state, they could enflower it, by the process described at page 71, with the flowers of the plumeria, acacia, jasmin-grandiflora, and pancratium, and numerous other flowers which abound and bloom unregarded: it would then yield six to eight shillings a pound!

PARAFFINE, that is, the true solid waxlike inodorous substance procurable by low distillation of boghead mineral, Irish bog peat, &c., &c., is an article that will find several uses in perfumery in place of beeswax. I have said it is waxlike; but in truth, on account of its crystalline character, it resembles more spermaceti, and has also the semi-transparency of that body.

Young's Patent Paraffine Company have generously supplied me with some fine samples of the sperm-like paraffine, which they say can be supplied in quantity at 1*s*. 5*d*. per lb. This, being 40 per cent. cheaper than wax, will of a certainty find its own market. From a variety of experiments, I conclude that paraffine is a valuable adjunct to perfumery, in the manufacture of pomades, &c., which have to be exported to hot climates.

Acacia Pomade, commonly called Cassie Pomatum, is made with a purified body-grease, by maceration with the little round yellow flower-heads of the *Acacia Farnesiana.** (See Cassie, page 87.)

Black-currant leaves, and which the French term *cassis*, have an odor very much resembling cassie (acacia), and are used extensively for adulterating the true acacia pomades and oils. The near similarity of name, their analogous odor (although the plants have no botanical connection), together with the word *cassia*, a familiar perfume in England, has produced generally confused ideas in this country as to the true origin of the odor now under discussion. Cassie, cassis, cassia, it will be understood now, are three distinct substances; and in order to render the matter more perspicuous in future, the materials will always be denominated Acacia, if prepared from the *Acacia Farnesiana;*

---

* I have placed a few of these plants in the Botanic Gardens, Regent's Park, and some seeds have been planted at Kew.

CASSE, when from *black-currant;* and CASSIA, if derived from the bark of the *Cinnamomum Cassia.*

BENZOIN POMADE AND OIL.

Benzoic acid is perfectly soluble in hot grease. Half an ounce of benzoic acid being dissolved in half a pint of hot olive or almond oil, deposits on cooling beautiful acicular crystals, similar to the crystals that effloresce from Vanilla beans; a portion of the acid, however, remains dissolved in the oil at the ordinary temperature, and imparts to it the peculiar aroma of benzoin; upon this idea is based the principle of perfuming grease with gum benzoin by the direct process,—that is, by macerating powdered gum benzoin in melted suet or lard for a few hours at a temperature of about 80° C. to 90° C. Nearly all the gum-resins give up their odoriferous principle to fatty bodies when treated in the same way; this fact becoming generally known, will probably give rise to the preparation of some new remedial ointments, such as *Unguentum myrrhæ, Unguentum assafœtida,* and the like.

TONQUIN POMADE and TONQUIN OIL are prepared by macerating the ground Tonquin beans in either melted fat or warm oil, from twelve to twenty-eight hours, in the proportion of—

Tonquin beans, ...	½ lb.
Fat or oil, ...	4 lbs.

Strain through fine muslin; when cold, the grease will have a fine odor of the beans.

VANILLA OIL AND POMADE.

Vanilla pods, ...	¼ lb.
Fat or oil, ...	4 lbs.

Macerate, at a temperature of 25° C., for three or four days; finally strain.

These pomatums and oils, together with the French pomades and huiles already described, constitute the *foundation* of the preparations of all the best hair-greases sold by perfumers. Inferior scented pomatums and oils are prepared by perfuming lard, suet, wax, oil, &c., with various ottos; the results, however, in many instances more expensive than the foregoing, are actually inferior in their odor or bouquet; for grease, however slightly perfumed by maceration or enfleurage with flowers, is far more agreeable to the olfactory nerve than when scented by ottos.

The following named greases have obtained great popularity, mainly because their perfume is lasting and flowery.

Pomade called Bears' Grease.

The most popular and "original" bears' grease is made thus:

Huile de rose, " fleur d'orange, " acacia, " tubereuse and jasmin, of each,	½ lb.
Almond oil,	10 lbs.
Lard,	12 lbs.
Acacia pomade,	2 lbs.
Otto of bergamot,	4 oz.
" cloves,	2 oz.

Melt the solid greases and oils together by a water-bath, then add the ottos.

Bears' grease thus prepared is just hard enough to "set" in the pots at a summer heat. In very warm weather, or if required for exportation to the East or West Indies, it is necessary to use in part French pomatums instead of oils, or more lard and less almond oil.

CIRCASSIAN CREAM.

Purified lard,	1 lb.
Benzoin suet,	1 lb.
French rose pomatum,	½ lb.
Almond oil, colored with alkanet,	2 lbs.
Otto of rose,	¼ oz.

BALSAM OF FLOWERS.

French rose pomatum,	12 oz.
" violet pomatum,	12 oz.
Almond oil,	2 lbs.
Otto of bergamot,	¼ oz.

CRYSTALLIZED OIL. (First quality.)

Huile de rose,	1 lb.
" tubereuse,	1 lb.
" fleur d'orange,	½ lb.
Spermaceti,	½ lb.

(Second quality.)

Almond,	2½ lb.
Spermaceti,	½ lb.
Otto of lemon,	3 oz.

Melt the spermaceti in a vessel heated by a water-bath, then add the oils; continue the heat until all flocks disappear; let the jars into which it is poured be warm; cool as slowly as possible, to insure good crystals; if cooled rapidly, the mass congeals without the appearance of crystals.

This preparation has a very nice appearance, and so far sells well; but its continued use for anointing the hair renders the head scurfy; indeed the crystals of sperm may be combed out of the hair in flakes after it has been used a week or two.

CASTOR OIL POMATUM.

Tubereuse pomatum,	1 lb.
Castor oil,	½ lb.
Almond oil,	½ lb.
Otto of bergamot,	1 oz.

Balsam of Neroli.

French rose pomatum,	½ lb.
" jasmine pomatum,	½ lb.
Almond oil,	¾ lb.
Otto of neroli,	1 drachm

Marrow Cream.

Purified lard,	1 lb.
Almond oil,	1 lb.
Palm oil,	1 oz.
Otto of cloves,	½ drachm.
" bergamot,	½ oz.
" lemon,	1½ oz.

Marrow Pomatum.

Purified lard,	4 lbs.
" suet,	2 lbs.
Otto of lemon,	1 oz.
" bergamot,	½ oz.
" cloves,	3 drachms.

Melt the greases; then beat them up with a whisk, or flat wooden spatula, for half an hour or more; as the grease cools, minute vesicles of air are inclosed by the pomatum, which not only increase the bulk of the mixtures, but impart a peculiar mechanical aggregation, rendering the pomatum light and spongy; in this state it is obvious that it fills out more pots than otherwise, and hence is more profitable.

Common Violet Pomatum.

Purified lard,	1 lb.
Washed acacia pomatum,	6 oz.
" rose pomatum,	4 oz.

Manipulate as for marrow pomatum.

In all the cheap preparations for the hair, the manufacturing perfumers use the *washed* French pomatums and the washed French oils for making their greases. Washed pomatums and washed oils are those greases that originally have been the best pomatums and huiles prepared by enfleurage and by maceration with the flowers; which pomades and huiles have been subjected to digestion in alcohol for the manufacture of essences for the handkerchief. After the spirit has been on the pomatums, &c., it is poured off; the residue is then called *washed* pomatum, and still retains an odor strong enough for the manufacture of most hair-greases.

For pomatums of other odors it is only necessary to substitute rose, jasmine, tubereuse, and others, in place of the acacia pomatum in the above formulæ.

Pomades Double, Millefleurs.

Rose, jasmine, fleur d'orange, violet, tubereuse, &c., are all made, in winter with two-thirds best French pomatum, one-third best French oils; in summer, equal parts.

Pommade a la Heliotrope.

French rose pomade,	1 lb.
Vanilla oil,	½ lb.
Huile de jasmin,	4 oz.
" tubereuse,	2 oz.
" fleur d'orange,	2 oz.
Otto of almonds,	6 drops.
" cloves,	3 drops.

Huile Antique a la Heliotrope.

Same as the above, substituting rose oil for the pomade.

Philocome.

The name of this preparation, which is a compound of two Greek words (φίλος and κόμη), signifying "a

SECTION XV.

HAIR-DYES AND DEPILATORY.

By way of personal adornment, few practices are of more ancient origin than that of painting the face, dyeing the hair, and blackening the eyebrows and eyelashes.

It is a practice universal among the women of the higher and middle classes in Egypt, and very common among those of the lower orders, to blacken the edge of the eyelids, both above and below the eye, with a black powder, which they termed *kohol.* The kohol is applied with a small probe of wood, ivory, or silver, tapering towards the end, but blunt. This is moistened sometimes with rose-water, then dipped in the powder, and drawn along the edges of the eyelids. It is thought to give a very soft expression to the eye, the size of which, in appearance, it enlarges; to which circumstance, probably, Jeremiah refers when he writes, "Though thou rentest thy face (or thine eyes) with painting, in vain shalt thou make thyself fair."*

A singular custom is observable both among Moorish and Arab females,—that of ornamenting the face between the eyes with clusters of bluish spots or other small devices, which, being stained, become permanent. The chin is also spotted in a similar manner, and a narrow blue line extends from the point of it, and is continued down the throat. The eyelashes, eyebrows, and also the tips and extremities of the eyelids, are colored black. The soles, and sometimes other parts of the feet, as high as the ankles, the palms of the hands, and the nails, are dyed with a yellowish-red with the leaves of a plant called henna,* or alkanna of Cyprus and Egypt (*Lawsonia inermis*), the leaf of which somewhat resembles the myrtle, and is dried for the purposes above mentioned. The ground leaves of the henna are made into a paste with lime-water, then applied to the skin, hair, or nails, and left on several hours; the color thus imparted will last several weeks. The back of the hand is also often colored and ornamented in this way with different devices. On holidays they paint their cheeks of a red brick color, a narrow red line being also drawn down the temples.

---

* Jer. 4 : 40. See also Lane's Modern Egyptians, vol. i, p. 41, et seq.

Similar customs are still prevalent in Persia. Lady Sheil, speaking of the Shah's mother, says:

> The palms of her hands and tips of her fingers were dyed red with an herb called henna, and the edges of the inner part of the eyelids were colored with antimony. All the Kajars have naturally large arched eyebrows; but, not satisfied with this, the women enlarge them by doubling their real size with great streaks of antimony: her cheeks were well rouged, as is the invariable custom among Persian women of all classes †

In Greece, "for coloring the lashes and sockets of the eye, they throw incense or gum labdanum on some coals of fire; the smoke which ascends is intercepted with a plate, in order to collect the soot. This I saw applied. A girl sitting, cross-legged as usual, on a sofa, closing one of her eyes, took the two lashes between the forefinger and thumb of her left hand, pulled them forward, and then thrusting in, at the external corner, a sort of bodkin or probe which had been immersed in the soot, and withdrawing it, the particles previously adhering to the probe remained within the eyelashes."*

---

* This plant is referred to in the Song of Solomon, under the name of "Camphire," but as Henna it is sold by Piesse and Lubin, of Bond Street.

† Glimpses of Life in Persia.

Dr. Shaw states that, among other curiosities that were taken out of the tombs at Sahara relating to Egyptian women, he saw a joint of the common reed, which contained one of these bodkins, and an ounce or more of this powder.

In England, a similar practice is adopted by many persons whose hair is gray; but instead of using the black material in the form of a powder, it is employed as a crayon, the color being mixed with a greasy body, such as the brown and black stick pomatums described in the previous article.

The question has been frequently discussed, "Is hair subject to sudden change in color?" and was answered in the negative by Dr. Davy, in a paper read before the Bristol Association at Manchester, 1861.

The popular notion is decidedly in favor of the affirmative, and many naturalists and physiologists have come to the same conclusion. They adduce instances of the change of the hair to white or gray, in the case of persons under strong emotions of grief or terror. Haller, in his *Elementa Physiologiæ*, refers to eight authorities for examples of such changes; but all that he seems to admit for himself is that under the influence of impaired health such a change may take place slowly. Marie Antoinette was cited by favorers of the popular notion, as a striking and well-authenticated instance; but when fairly considered, the case came under the condition admitted by Haller.

---

* Chandler's Travels in Greece.

During the confinement of Marie Antoinette, the Queen of France, by the Jacobins of Paris, she was deprived of the use of the cosmetics with which she was wont to give the raven hue to her naturally silvery locks; and history, in describing her execution, represents her hair as changing from a jet black to gray through the mental anguish she experienced.

Had it been possible for mental emotion, whether of terror or of grief, to render hair suddenly gray, surely in the Queen's case the change should have been witnessed at an earlier period than that of the arrest of the royal family in their attempt to leave France. If such a sudden change could be presumed, might we not expect to witness it in soldiers engaged in an active campaign amidst all the dangers and horrors of war? Dr. Davy had himself examined thousands of soldiers, men prematurely worn out in various climates, and concerned in many a hard-fought battle—many of them grievously wounded—but he never met with an instance of the kind.

The Transactions of the Royal Society, extending over 200 years, do not contain an instance of such change in the color of the hair,—a circumstance opposed to the conclusion that it ever took place, for had it ever been undoubtedly witnessed, it is not likely that it would have remained undescribed. The author is not aware that, irrespective of recorded evidence, anything in support of the popular notion can be adduced on physiological grounds. Human hair cannot be injected. Using coloring fluids, such as a solution of nitrate of silver and a solution of iodine, the author has not observed any change of color, except in the portions actually immersed. Whether it owes its color to a fixed oil, to a peculiar arrangement of its constitutional molecules, or to both, it resists decay in a remarkable manner; it resists the action of acids and alkalies, except the strongest, which dissolve it. It resists maceration, and even boiling water, except continued for a long time, and under pressure, when it suffers disintegration and decomposition. Exposure to the sun will bleach hair, but this will not account for any very sudden change of color. Supporters of the popular opinion refer to changes in the plumage of birds, such as the ptarmigan, and in the hair of certain quadrupeds, such as the mountain hare and ermine, which become white towards winter, and of a darker hue when the winter is past.

Mr. Erasmus Wilson, who advocates the popular doctrine, refers to the case of a lemming in support of his views; but Mr. Blyth, a naturalist, says that he examined a lemming killed during its autumnal change, and satisfied himself that "the white hairs were all new, and not the brown changed in color." There are reasons why it might be expected that the summer coat and plumage should be darker than those of the winter. The author concludes, that whether we consider one side of the question or the other—the human evidence so questionable, the physiological so much more reliable—the idea of fallacy is unavoidable, as to the hair being subject to sudden change of color from mental impression.

The attempts made to explain such a change by physiologists are allowed to be complete failures; and more amusing attempts had been made to explain the phenomenon on other grounds than those of fallacy. Dr. Davy, when on foreign service, knew an assistant surgeon of a regiment who had become insane, and whom he visited a fortnight or three weeks subsequently. The patient's hair, before brown, had become gray; but when he called attention to the fact, the regimental surgeon simply said, "Your surprise will cease, when you know that —— has, since he has been afflicted with his malady, discontinued dyeing his hair."

The assassin Orsini, lately executed in Paris for attempting the life of the French emperor, and ruthlessly murdering twelve innocent persons, presented the same apparently strange anomaly from the same cause. When Orsini was arrested, his luxuriant locks were as black as night, but when guillotined, they were of an iron gray color, simply because he either neglected his toilet, or else was deprived of the usual hair-dye he previously employed to give them their black color. His friends, and the papers generally, attribute the change to another cause, of course, and we have no doubt that history will represent the effect as being produced by the mental activity and agony he experienced during his incarceration.

As a rule, all hair-dyes should be avoided; in almost every case the process is prejudicial to the unities which tend to form that harmonious whole, which we call personal beauty. The chief characteristics of beauty, independent of form, are the complexion, the eyes, and the hair; and therefore the first question to be asked, before attempting to change the color of so important an auxiliary to beauty as the hair should naturally be—"Will the change suit the complexion and the eyes?" The Teutonic beauty of Anglo-Saxons and Anglo-Normans has come down to the people of Great Britain, along with the practical common sense of the one and the lofty bearing of the other. The mass of female loveliness which graces the land is therefore essentially "fair,"—white and clear, in contradistinction to brown and dark. A clear rosy complexion, blue eyes, and hair more or less auburn, are all the most prevalent. Now, to change either the color of the complexion or of the hair is to destroy the unities of such a style of beauty, because the eye cannot be changed *en suite;* and it produces the same incongruous effect as an ill-dressed woman often presents by a display of ill-assorted colors in her attire. "Fair" persons are seldom, if ever, improved in appearance by the process of hair-dyeing. Such persons who do not exhibit these marked features of Teutonic extraction, in whose veins commingles the blood of a more southern race —whose dark or brown complexion, gazelle-like eyes, and raven hair, tend to form that style of beauty we designate "brunette"—should age trip up youth, or their locks become prematurely gray or silvery white, may call in the aid of art to restore the hair to its original tint, without infringing the principles of the harmony of color. If the hair be too glowing, too bright an auburn to assimilate well with the eyes, or with the blush of the cheek, then its redness can be artificially lowered by the application of an article sold under the name of walnut-water, but which in reality consists of a solution of plumbate of potash, and is made by dissolving freshly precipitated oxide of lead in liquor potassa to saturation.

KOHOL.

The word *Kohol* is derived from the Hebrew, and signifies *to paint.* The Oriental females were, and are still, in the habit of painting the eyebrows with various pigments; the one generally employed is sulphide of antimony finely levigated. This custom has at length to a small extent been adopted in England, but the kohol employed here does not contain antimony, but consists of a solution of Chinese (Indian) ink in rose-water. To prepare the kohol, a stick of the Chinese ink, of about half an ounce weight, is to be reduced to a fine powder in a mortar—a task of no little difficulty; half a pint of hot rose-water is then to be rubbed gradually into the powder till the whole is uniformly fluid, which will not be unless it is repeatedly triturated for two days. Kohol thus made is applied to the eyelashes and brows with a fine camel's-hair pencil.

TURKISH HAIR-DYE.

In Constantinople there are some persons, particularly Armenians, who devote themselves to the preparation of cosmetics, and obtain large sums of money from those desirous of learning this art. Amongst these cosmetics is a black dye for the hair, which, according to M. Landerer of Athens, is prepared in the following manner:

Finely pulverized galls are kneaded with a little oil to a paste, which is roasted in an iron pan until the oil vapors cease to evolve, upon which the residue is triturated with water into a paste, and heated again to dryness. At the same time a metallic mixture, which is brought from Egypt to the commercial marts of the East, and which is termed in Turkish *Rastikopetra*, or *Rastik-Yuzi*, is employed for this purpose. This metal, which looks like dross, is by some Armenians intentionally fused, and consists of iron and copper. It obtains its name from its use in dyeing or staining the hair, and particularly the eyebrows—for *rastik* means eyebrows, and *yuzi* stone. The fine powder of this metal is as intimately mixed as possible with the moistened gall mass into a paste, which is preserved in a damp place, by which it acquires the blackening property. In some cases this mass is mixed with the powder of odorous substances which are used in the seraglio as perfumes, and called *karsi*—that is, pleasant odor; and of these the principal ingredient is ambergris. To blacken the hair, a little of this dye is triturated in the hand or between the fingers, with which the hair or beard is well rubbed. After a few days the hair becomes very beautifully black, and it is a real pleasure to see such fine black beards as are met with in the East among the Turks who use this black dye. Another and important advantage in the use of this dye consists herein, that the hair remains soft, pliant, and for a long time black, when it has been once dyed with this substance. That the coloring properties of this dye are to be chiefly ascribed to the pyrogallic acid, which can be formed by treating the mass with water, may be with certainty assumed.

Litharge Hair-dye.

Powdered litharge,	2 lbs.
Quicklime,	½ lb.
Calcined magnesia,	½ lb.

Slake the lime, using as little water as possible, to make it disintegrate, then mix the whole by a sieve.

Another way.

Slaked lime,	3 lbs.
White lead, in powder,	2 lbs.
Litharge,	1 lb.

Mix by sifting, bottle, and well cork.

Directions to be sold with the above:

Mix the powder with enough water to form a thick creamy fluid; with the aid of a small brush, completely cover the hair to be dyed with this mixture: to dye a light brown, allow it to remain on the hair four hours; dark brown, eight hours; black, twelve hours. As the dye does not act unless it is moist, it is necessary to keep it so by wearing an oiled silk, india-rubber, or other waterproof cap.

After the hair is dyed, the refuse must be thoroughly washed from the head with plain water; when dry, the hair must be oiled.

Simple Silver Dye (otherwise Vegetable Dye).

Nitrate of silver,	1 oz.
Rose-water,	1 pint.

Before using this dye, it is necessary to free the hair from grease by washing it with soda or pearl-ash and water. The hair must be quite dry prior to applying the dye, which is best laid on with an old tooth-brush. This dye does not "strike" for several hours. It need scarcely be observed that its effects are more rapidly produced by exposing the hair to sunshine and air, and by washing the hair previously with sulphur soap.

HAIR-DYE WITH MORDANT.

Brown.

Nitrate of silver,	1 oz. blue bottles.
Rose-water,	8 oz. "
The Mordant.—Sulphuret of potassium,	1 oz. white bottles.
Water,	6 oz.

Black.

Nitrate of silver,	1 oz. blue bottles.
Water,	6 oz. "
The Mordant.—Sulphuret of potassium,	1 oz. white bottles.
Water,	6 oz.

The mordant is to be applied to the hair first: when this is dry, then the silver solution.

Great care must be taken that the sulphuret is fresh made, or at least, well preserved in closed bottles, otherwise, instead of the mordant making the hair black, it will impart a *yellow* hue. When the mordant is good it has a very disagreeable odor; and although this is the quickest and best dye, its unpleasant smell has given rise to the

INODOROUS DYE.

Blue Bottles.—Dissolve the nitrate of silver in the water as in the above; then add liquid ammonia by degrees until the mixture becomes cloudy from the precipitate of the oxide of silver; continue to add ammonia in small portions until the fluid again becomes bright from the oxide of silver being redissolved.

White Bottles.—Pour half a pint of boiling rose-water upon three ounces of powdered gall nuts; when cold, strain and bottle. This forms the mordant, and is used in the same way as the first-named dye, like the sulphuret mordant. It is not so good a dye as the previous one.

MANGANESE BROWN HAIR-DYE.

Under the name of "Baffine," a very excellent brown hair-dye has been introduced by Mr. Condy, of Battersea. It consists of saturated solution of permanganate of potass. This salt, like nitrate of silver, undergoes decomposition when in contact with organic substances. Hair and skin are stained by it of a good chestnut hue. For the purpose of dyeing the hair it is therefore necessary to take the usual precaution not to wet the partings of the hair with the manganese fluid.

French Brown Dye.

Blue Bottles.—Saturated solution of sulphate of copper; to this add ammonia enough to precipitate the oxide of copper and redissolve it (as with the silver in the above), producing the azure liquid.

White Bottles.—Mordant.—Saturated solution of prussiate of potass.

Artificial hair, for the manufacture of perukes, is dyed in the same manner as wool.

There are in the market several other hair-dyes, but all of them are but modifications of the above, possessing no marked advantage.

Pencil Water, and Walnut Water.

Under the above names a weak hair-dye is made, which consists of an alkaline solution of lead, or rather plumbate of potash; it is slow in its action, but it does not blacken the skin,—no inconsiderable advantage. It may be thus prepared:

Dissolve in one ounce of liquor potassæ as much freshly precipitated oxide of lead as it will take up, and dilute the resulting clear solution with three ounces of distilled water. Care must be taken not to wet the skin unnecessarily with it.

QUICK DEPILATORY OR RUSMA (for removing Hair).

The word depilatory is derived from *de pilus*, of the hair. As the ladies of this country consider the growth of hair upon the upper lip, upon the arms, and on the back of the neck to be detrimental to beauty, those who are troubled with such physical indications of good health and vital stamina have long had recourse to rusma or depilatory for removing it. This and analogous preparations were introduced into this country from the East, rusma having been in use in the harems of Asia for many ages.

Best lime slaked, ...	3 lbs.
Orpiment, in powder, ...	½ lb.

Mix the material by means of a drum sieve; preserve the same for sale in well-corked or stoppered bottles.

Directions to be sold with the above:

Mix the depilatory powder with enough water to render it of a creamy consistence; lay it upon the hair for about five minutes, or until its caustic action upon the skin renders it necessary to be removed; a similar process to shaving is then to be gone through, but instead of using a razor, operate with an ivory or bone paper-knife; then wash the part with plenty of water, and apply a little cold cream.

Dr. Redwood says that the best and safest depilatory consists of a strong solution of sulphuret of barium made into a paste with thick starch; it must be applied immediately it is made, as it rapidly spoils.

The precise time to leave depilatory upon the part to be depilated cannot be given, because there is a physical difference in the nature of hair. "Raven tresses" require more time than "flaxen locks;" the sensitiveness of the skin has also to be considered. A small feather is a very good test for its action.

A few readers will, perhaps, be disappointed in finding that I have only given one formula for depilatory. The receipts might easily have been increased in number, but not in quality. The use of arsenical compounds is objectionable, but it undoubtedly increases the depilating action of the compounds. A few compilers of "Receipt Books," and others, add to the lime "charcoal powder," "carbonate of potass," "starch," &c.; but what action have these materials, chemically, upon hair? The simplest depilatory is moistened quicklime, but it is less energetic than the mixture recommended above; it answers very well for tanners and fellmongers, with whom time is no object.

Hernandia Depilatory.

Burnett says that the juice of the leaves of the *Hernandia Sonora* is found to be an advantageous and effectual depilatory, as it destroys the hair wherever it is employed, without pain to the skin.

Knowing from experience how much many of my countrywomen would value such an article, it is my intention at an early period to test the value of this assertion, and if it be possessed of the properties asserted, Hernandia depilatory shall shortly be at their command.

Golden Hair Powder.

Powder d'or was first worn by the Empress Eugenie, at the Festival of Bœuf Gras, 1860. Since then this pretty conceit, as the wave of fashion always does, has extended from its centre to the circle of all who pretend to move within its sphere.

The best quality consists of crushed gold leaf, the common kind, or "speckles," is nothing more than a coarse bronze powder.

SECTION XVI.

ABSORBENT POWDERS AND ROUGES.

A LADY's toilet-table is incomplete without a box of some absorbent powder; indeed, from our earliest infancy, powder is used for drying the skin with the greatest benefit: no wonder that its use is continued in advanced years, if, by slight modifications in its composition, it can be employed not only as an absorbent, but as a means of "personal adornment." We are quite within limits in stating that many tons weight of such powders are used in this country annually. They are principally composed of various starches, prepared from wheat, potatoes, and various nuts, mixed more or less with powdered talc, magnesia, steatite (soapstone), French chalk, oxide of bismuth, and oxide of zinc, &c. These powders are best applied to the face with a hare's foot, which are prepared and fitted with handles for that purpose. When, however, the powder is applied to the skin generally, as for the purpose of drying it after washing, what is termed a "puff," of swan's down, is now mostly employed. An authority has informed me that there are about 5000 swans' skins imported into England annually—passing through the Customhouse; however, there is good reason to suppose that vast numbers also find their way here, "dispensing with the tediousness of customs regulations altogether;" now presuming this number to be 2000, we should have an actual importation of 7000 swans' skins. Each skin will make on an average 60 puffs, equal to a total produce of 420,000 per annum. The name puff applied to these articles is derived from the "puff-box," a "household appendage" of every home in the reign of the Georges, at which time everybody wore powder. The puff-box of that period was constructed like a flour dredger; but the sides of it were collapsible leather; in the interior was a spring and the powder. It was used like a pair of bellows. Thus our grandfathers powder-puffed themselves before they entered society! The best swans' skins for puffs come from Holland, and are very thick in the down. There are some imported from Canada, and North America, but like our English swans they are thinner in the down than the Dutch swan.

The most popular powder is what is termed

VIOLET POWDER.

Wheat starch,	12 lbs.
Orris-root powder,	2 lbs.
Otto of lemon,	½ oz.
" bergamot,	¼ oz.
" cloves,	2 drachms.

PISTACHIO-NUT TOILET POWDER.

Starch of pistachio nuts,	7 lbs.
French chalk, in fine powder,	7 lbs.
Otto of rose and lavender, each,	1 drachm.

Well sifted together through a fine sieve.

Starch can be procured from an infinite variety of sources, and according to the material it is procured from, so is the size of the grain. Wheat starch comparatively has a very coarse grain, hence the ordinary powder is too coarse for the complexion, but nut starch (Brazil, Barcelona, almond, pistachio, or any other), yields a fine grain, smooth and soft, very suitable for complexion powders.

ROSE FACE POWDER.

Rice starch,	7 lbs.
Rose pink,	½ drachm.
Otto of rose,	2 drachms.
" santal,	2 drachms.

PLAIN OR UNSCENTED HAIR POWDER

Is pure wheat starch.

FACE POWDER.

Starch,	1 lb.
Oxide of bismuth,	4 oz.

PERLE POWDER.

French chalk,	1 lb.
Oxide of bismuth,	1 oz.
Oxide of zinc,	1 oz.

FRENCH BLANC

Is levigated talc passed through a silk sieve. This is a very good face powder, particularly as it does not discolor from emanations of the skin or impure atmosphere.

As to painting the face, it appears to be practised, more or less, by both male and female, from the earliest period to the present time. "And when Jehu was come to Jezreel, Jezebel heard of it; and she painted her face, and tired her head, and looked out at a window." 2 Kings 9:30. Gibbon,* describing the Roman Emperor Eliogabalus, says, that at his first entry into the eternal city, his eyebrows were tinged with black, and his cheeks painted with an artificial red and white. Almost the first present that the Empress made to Catharine, newly arrived at court, and scarcely fifteen years old, was a rouge-pot.† A well-known Duke, now living, never appears in public until "got up" with a fair quantity of rouge, and which is more particularly noticed, as his Grace invariably paints round his eyes so much that he appears just to have escaped after a pugilistic encounter. His Grace is rather eccentric, to be sure, as it has been said that he went to France in a balloon, for fear of the *mal de mer.*

LIQUID BLANC DE PERLE (for theatrical use).

The use of a white paint by actresses and dancers is absolutely necessary; great exertion produces a florid complexion, which is incompatible with certain scenic effects, and requires a cosmetic to subdue it. The late Madame V——, during her stage career, has probably consumed more than half a hundredweight of oxide of bismuth, prepared thus:

Rose or orange-flower water, ...	1 pint.
Oxide of bismuth, ...	4 oz.

Mixed by long trituration.

---

* Gibbon's "Decline and Fall of the Roman Empire," vol. i, ch. vi, p. 233.

† Mémoires de l'Impératrice Catharine II, par M. A. Herzen.

Calcined Talc

Is also extensively used as a toilet powder, and is sold under various names; it is not so unctuous as the ordinary kind.

Rouge and Red Paints.

These preparations are in demand, not only for theatrical use, but by private individuals. Various shades of color are made, to suit the complexions of the blonde and brunette. One of the best kind is that termed

Bloom of Roses.

Strong liquid ammonia,	½ oz.
Finest carmine,	¼ oz.
Rose-water,	1 pint.
Esprit de rose, triple,	½ oz.

This preparation, almost a necessary appendage to the toilet of every lady in France and Germany, is used to impart to the lips that cherry-like hue so much admired. It is also used to give the pale and wan cheek a roseate bloom. In many respects it is superior to rouge, which is now almost as prevalent in this country as in the days of George the Third, when spots and rouge were fit subjects for Swift's sarcasm, as crinoline now serves *Punch.*

Place the carmine in a pint bottle, and pour on it the ammonia; allow them to remain together, with occasional agitation, for two days; then add the rose-water and esprit, and well mix. Place the bottle in a quiet situation for a week; any precipitate of impurities from the carmine will subside; the supernatant "Bloom of Roses" is then to be bottled for sale. If the carmine was perfectly pure, there would be no precipitate; nearly all the carmine purchased from the makers is more or less sophisticated, its enormous price being a premium for its adulteration.

Carmine cannot be manufactured *profitably* on a small scale for commercial purposes; four or five manufacturers supply the whole of Europe. M. Titard, Rue Grenier St. Lazare, Paris, produces, without doubt, the finest article; singularly enough, however, the principal operative in the establishment is an old Englishman.

The preparation of the finest carmine is still a mystery, because, on the one hand, its consumption being very limited, few persons are engaged in its manufacture, and upon the other, the raw material being costly, extensive experiments on it cannot be conveniently made.—DR. URE.

A manufacturer of carmine, who was aware of the superiority of the French color, went to Lyons for the purpose of improving his process, and bargained with the most celebrated manufacturer in that city for the acquisition of his secret, for which he was to pay one thousand pounds. He was shown all the process, and saw a beautiful color produced; but he found not the least difference in the French mode of fabrication and that which had been constantly adopted by himself. He appealed to his instructor, and insisted that he must have concealed something. The man assured him that he had not, and invited him to see the process a second time. He minutely examined the water and the materials, which were in every respect similar to his own, and then, very much surprised, said, "I have lost my labor and my money, for the air of England does not permit us to make good carmine." "Stay," said the Frenchman; "don't deceive yourself. What kind of weather is it now?" "A bright, sunny day," replied the Englishman. "And such are the days," said the Frenchman, "on which I make my color. Were I to attempt to manufacture it on a dark or cloudy day, my results would be the same as yours. Let me advise you, my friend, always to make carmine on bright, sunny days." "I will," rejoined the Englishman; "but I fear I shall make very little in London!"—SIR H. DAVY.

In the *Encyclopédie Roret* will be found no less than a dozen recipes for preparing carmine; the number of formulæ will convince the most superficial reader that the true form is yet withheld.

Analysis has taught us its exact composition; but a certain dexterity of manipulation and proper temperature are indispensable to complete success.

Most of the recipes given by Dr. Ure, and others, are from this source; but as they possess no practical value, we refrain from reprinting them.

Mr. B. Wood patented the following method of making carmine, which may be very useful to some of our readers who have to pay a much higher price for this material than it would cost themselves to make it. Take 9 ounces of the carbonate of soda, and dissolve it in 27 quarts of rain-water, to which are added 8 ounces of citric acid. When brought to the boiling-point 1½ lbs. of the best cochineal ground fine, are added, and then boiled for 1¼ hours. The liquor is then strained or filtered and set by to cool. The clear liquor is then boiled again, with 9½ ounces of alum, for about ten minutes, and is again drawn off and allowed to cool and settle for two or three days. The supernatant liquor is then drawn off, and the sediment which is fallen to the bottom is filtered and washed with clean cold soft water, and is finally dried by evaporating all the moisture. The result is fine carmine, which can be made into the finest red ink by dissolving it in a caustic solution of ammonia, adding a little dissolved gum arabic.

By the old plan of making carmine, no citric acid was used; the cochineal was simply boiled in soft rain-water for two hours, containing a minute quantity of carbonate of soda, then allowed to settle, and treated by remainder of the process described above.

Process for the Manufacture of Carmine

ıprovement in the brilliancy of the color is ob- by adding about one-ninth part of the crystals alt of tin to the alum, using for this purpose a part less of alum than the amount given above.

Toilet Rouges.

prepared of different shades by mixing fine car- with talc powder, in different proportions; say rachm of carmine to two ounces of talc, or one mine to three of talc, and so on. These rouges ld in powder, and also in cake, or china pots; e latter the rouge is mixed with a minute por- of solution of gum tragacanth. M. Titard prepares a great variety of rouges. In some instances the coloring matter of the cochineal is spread upon thick paper and dried very gradually; it then assumes a beautiful green tint. This curious optical effect is also observed in "pink saucers." What is known as Chinese book-rouge is evidently made in the same way, and has been imported into this country for many years.

When the bronze-green cards are moistened with a piece of damp cotton-wool, and applied to the lips or cheeks, the color assumes a beautiful rosy hue. Common sorts of rouge, called "theatre rouge," are made from the Brazil-wood lake; another kind is derived from the safflower (*Carthamus tinctorius*); from this plant also are made

Pink Saucers.

The safflower is washed in water until the yellow coloring matter is removed; the carthamine, or color principle, is then dissolved out by a weak solution of carbonate of soda; the coloring is then precipitated into the saucers by the addition of sulphuric acid to the solution.

Cotton-wool and crape, being colored in the same way, are used for the same purpose, the former being sold as Spanish wool, the latter as Crépon rouge.

SYMPATHETIC BLUSH OR SCHNOUDA.

Under the euphonious name of *Schnouda* an article for coloring the cheeks has been recently introduced into perfumery. I prefer to call it Sympathetic Blush, on account of its peculiar qualities.

In a chemical sense it possesses very great interest, and illustrates in one way how science is applied to the arts.

The coloring principle of this Blush is known to chemical philosophers under the name of *Alloxan*, and was discovered by Liebig.

Alloxan is white, and is soluble in water; being mixed up with a greasy body after the manner of cold cream, a white cream results.

On exposure to the air by rubbing it upon the cheek, lips, or other "situation," the Alloxan gradually turns to deep rose-color from the oxidizing influence of the atmosphere. Used judiciously, it creates the most perfect delusion perpetrated by the toilet of fashion.

BLUE FOR VEINS.

The arts of the toilet are carried to such desires, that unless the veins could at times be indicated by a faint blue vermicular line, there would still be a want for the perfumers to supply.

Blue wherewith to imitate the veins is made with exceedingly fine levigated French chalk, sifted through a silk sieve, tinted to the proper shade with Prussian blue, then made into a paste with very thin gum-water; when dry it is put up into pots in the same way as rouge.

After the complexion has been duly whitened with blanc, the veins are indicated with a little of the coloring applied with a pencil made of kid-leather, the inside of the skin being made the outside of the pencil.

Artistically used, the effect is pleasing and natural.

Nail Powder.

With moderate attention the finger-nails become greatly ornamental; but without it they are worse than a disfigurement; in fact, the state of the finger-nails may be said to indicate either refinement or its absence. The nails should be cut at least once a fortnight, and a sharp penknife produces a smoother edge than scissors do. Some persons cannot cut the nails of the right hand, but this little difficulty is got over with a very little practice, and the left hand adapts itself readily where its services can be beneficially employed. Clean nails are so essential, that in England we never admit that a hand is clean, however well washed, unless the nails are clean also. Agnails are prevented by releasing the quick from its attachment to the nail about once a week. Some persons push the quick down with the towel every time they wash their hands; but small ivory "nail-cleaners," sold by perfumers, are greatly preferred. "Biting the nails" is an offence against good manners, and richly deserves the punishment that it eventually brings with it, in the disfigurement it perpetuates. A pretty hand is greatly improved by careful attention to the nails, and even a hand which would otherwise be somewhat of a disfigurement to the person, is rendered pleasing to the eye, if proper attention be given to the nails. The best nail powder consists of pure oxide of tin perfumed with otto of lavender and tinted with carmine; it is sold in little wooden boxes of about one ounce each. It is applied either by rubbing it on to the nail with the finger, or with a nail polisher covered with leather. As oxide of tin is employed for polishing tortoise-shell, we can easily understand how useful it is for horn and nails.

SECTION XVII.

TOOTH-POWDERS AND MOUTH-WASHES.

THE teeth should be fairly used, not made to perform the duties of crackers for nuts, nor to rival scissors in cutting thread; for rest assured, the teeth so unwittingly injured will always be the first to part company from their fellows. Cleanliness is absolutely essential for the preservation of the teeth, and they should be well brushed at least morning and evening, that any feculence which may be attached to them, either during sleep from the stomach, or by day from meals, may not be allowed permanently to adhere, causing, firstly, discoloration, then tartar, and subsequently undermining the health of one or more, as from their position they may be more or less liable to corrosion. In order that the teeth should look natural—that is, retain their natural color—a dentifrice free from the smallest particle of acid should be used in the morning, and the mouth rinsed with tepid water, for extremes of heat and cold are most highly prejudicial both to their color and durability. The persons who habituate themselves to hot soup, tea, or other drinks, will be sure to suffer in their teeth. Brushes for the teeth should be of medium substance of bristle, and those made on what is called the penetrating principle are best. Children at an early age should be instructed in the use of the tooth-brush, and taught the value and importance of the teeth, in order to inculcate habits of cleanliness and a due appreciation of the ornaments of the mouth. A brush properly selected, not too hard, may be used by children of five years of age, every morning; and by being part and parcel of the general ablution, and thus directing habitual attention to the teeth, a useful and cleanly habit will be engendered which will probably insure for them proper care through life.

TOOTH-POWDERS, regarded as a means merely of cleansing the teeth, are most commonly placed among cosmetics; but this should not be, as they assist greatly in preserving a healthy and regular condition of the dental machinery, and so aid in perfecting as much as possible the act of mastication. In this manner they may be considered as most useful, although, it is true, subordinate medicinal agents. By a careful and prudent use of them, some of the most frequent causes of early loss of the teeth may be prevented; these are, the deposition of tartar, the swelling of the gums, and an undue acidity of the saliva. The effect resulting from accumulation of the tartar is well known to most persons, and it has been distinctly shown that swelling of the substance of the gums will hasten the expulsion of the teeth from their sockets; and the action of the saliva, if unduly acid, is known to be at least injurious, if not destructive. Now, the daily employment of a tooth-powder sufficiently hard, so as to exert a tolerable degree of friction upon the teeth, without, at the same time, injuring the enamel of the teeth, will, in most cases, almost always prevent the tartar accumulating in such a degree as to cause subsequent injury to the teeth; and a flaccid, spongy, relaxed condition of the gums may be prevented or overcome by adding to such a tooth-powder some tonic and astringent ingredient. A tooth-powder containing charcoal and cinchona bark will accomplish these results in most cases, and therefore dentists generally recommend such. Still, there are objections to the use of charcoal; it is too hard and resisting, its color is objectionable, and it is perfectly insoluble by the saliva; it is apt to become lodged between the teeth, and there to collect decomposing animal and vegetable matter around such particles as may be fixed in this position. Cinchona bark, too, is often stringy, and has a bitter, disagreeable taste. M. Miahle highly recommends the following formula:

MIALHE'S TOOTH-POWDER.

Sugar of milk, one thousand parts; lake, ten parts; pure tannin, fifteen parts; oil of mint, oil of aniseed, and oil of orange-flowers, so much as to impart an agreeable flavor to the composition.

His directions for the preparation of this tooth-powder are, to rub well the lake with the tannin, and gradually add the sugar of milk, previously powdered and sifted; and lastly, the essential oils are to be carefully mixed with the powdered substances. Experience has convinced him of the efficacy of this tooth-powder, the habitual employment of which will suffice to preserve the gums and teeth in a healthy state. For those who are troubled with excessive relaxation and sponginess of the gums, he recommends the following astringent preparation:

MIALHE'S DENTIFRICE.

Alcohol, one thousand parts; genuine kino, one hundred parts; rhatany root, one hundred parts; tincture of balsam of tolu, two parts; tincture of gum benzoin, two parts; essential oil of canella, two parts; essential oil of mint, two parts; essential oil of aniseed, one part.

The kino and the rhatany root are to be macerated in the alcohol for seven or eight days; and after filtration, the other articles are to be added.

A teaspoonful of this preparation mixed in half a goblet of water should be used to rinse the mouth after the use of the tooth-powder. The word dentifrice is derived from *dens, frico*—a tooth, I rub.

CAMPHORATED CHALK.

Precipitated chalk, ...	1 lb.
Powdered orris-root, ...	½ lb.
Powdered camphor, ...	¼ lb.

Reduce the camphor to powder by rubbing it in a mortar with a little spirit, then sift the whole well together.

On account of the volatility of camphor, the powder should always be sold in bottles, or at least in boxes lined with tinfoil.

QUININE TOOTH-POWDER.

Precipitated chalk, ...	1 lb.
Starch powder, ...	½ lb.
Orris powder, ...	½ lb.
Sulphate of quinine, ...	1 drachm.

After sifting, it is ready for sale.

PREPARED CHARCOAL.

Fresh made charcoal, in fine powder, . . .	7 lbs.
Prepared chalk, ...	1 lb.
Orris-root, ...	1 lb.
Catechu, ...	½ lb.
Cassia bark, ...	½ lb.
Myrrh, ...	¼ lb.

Peruvian Bark Powder.

Peruvian bark, in powder,	½ lb.
Bole armeniac,	1 lb.
Orris powder,	1 lb.
Cassia bark,	½ lb.
Powdered myrrh,	½ lb.
Precipitated chalk,	½ lb.
Otto of cloves,	¼ oz.

Homœopathic Chalk.

Precipitated chalk,	1 lb.
Powdered orris,	1 oz.
“ starch,	1 oz.

Cuttle-fish Powder.

Powdered cuttle-fish,	½ lb.
Precipitated chalk,	1 lb.
Powdered orris,	½ lb.
Otto of lemons,	1 oz.
“ neroli,	½ drachm.

Borax and Myrrh Tooth-Powder.

Precipitated chalk,	1 lb.
Borax powder,	½ lb.
Myrrh, “	¼ lb.
Orris, “	¼ lb.

Farina Piesse's Powder.

Burnt horn,	2 lbs.
Orris-root,	2 lbs.
Carmine,	1 drachm.
Very fine powdered sugar,	½ lb.
Otto of neroli,	½ drachm.
“ lemons,	¼ oz.
“ bergamot,	¼ oz.
“ orange-peel,	¼ oz.
“ rosemary,	1 drachm.

ROSE TOOTH-POWDER.

Precipitated chalk,	1 lb.
Orris,	½ lb.
Rose pink,	2 drachms.
Otto of rose,	1 drachm.
" santal,	¼ drachm.

All these powders are to be well sifted together; they are then ready for sale.

OPIATE TOOTH-PASTE.

Honey,	½ lb.
Chalk,	½ lb.
Orris,	½ lb.
Carmine,	2 drachms.
Otto of cloves, " nutmeg, " rose, } of each,	½ drachm.
Simple syrup,	enough to form a paste.

MOUTH-WASHES.

VIOLET MOUTH-WASH.

Tincture of orris,	½ pint.
Esprit de rose,	½ pint.
Spirit,	½ pint.
Otto of almonds,	5 drops.

This is a very nice preparation, and gives great satisfaction.

EAU BOTOT.

Tincture of cedar-wood,	1 pint.
" myrrh,	¼ pint.
" rhatany,	¼ pint.
Otto of peppermint,	15 drops.
" roses,	10 drops.

Botanic Styptic.

Rectified spirit,		1 quart.
Rhatany root, Gum myrrh, Whole cloves,	of each,	2 oz.

Macerate for fourteen days, and strain.

All these tinctures should be made with grape spirit, or at least with pale unsweetened brandy.

Tincture of Myrrh and Borax.

Spirits of wine,		1 quart.
Borax, Honey,	of each,	1 oz.
Gum myrrh,		1 oz.
Red sanders-wood,		1 oz.

Rub the honey and borax well together in a mortar, then gradually add the spirit—which should not be stronger than .920, *i. e.*, proof spirit,—the myrrh, and sanders-wood, and macerate for fourteen days.

It exalts the flavor and expense, but it yet improves the quality of the result, to employ half Cologne or Hungary water, in place of all spirits of wine.

Tincture of Myrrh with Eau de Cologne.

Eau de Cologne,	1 quart.
Gum myrrh,	5 oz.

Macerate for fourteen days, and filter.

Camphorated Eau de Cologne.

Eau de Cologne,	1 quart.
Camphor,	5 oz.

TURKISH PASTIL LOZENGES.

For the use of smokers, or to prevent the taste of medicine. These lozenges are made thus:

Fine sugar,	4 lbs.
Citric acid,	4 drachms.
Otto of roses,	5 drops.
Grain musk,	4 grains.
Otto of vitivert,	½ drachm.

Gum tragacanth dissolved in water, enough to form the whole into a paste, tinted with liquid lake.

SECTION XVIII.

HAIR-WASHES.

As a general rule, society does not use enough pomades and hair oils; hence the number of rough-looking heads of hair that are to be seen when men are assembled together with their "hats off," as in a court of justice and similar places of public resort. In boarding-schools, in vain are soap and water employed to destroy an odious parasite, whose name need not be mentioned; but which is never seen or heard of where the toilette is liberally supplied with good pomade or oil. On the other hand, there are persons whose hair is so naturally moist and greasy that no kind of unguent is required. Such hair is very liable to come off, to be thin, lank, and pliable; whereas good hair should always have a certain amount of "woolliness" in it, to give that appearance of life and vigor so becoming in curly locks, and the excess of which is a negro head. Thin and naturally greasy hair requires a wash to keep it in nice order; and if the hair is falling off, either from sickness or natural decay, the wash should be astringent and stimulant.

ROSEMARY WATER.

Rosemary, free from stalk, ...	10 lbs.
Water, ...	12 gallons.

Draw off by distillation ten gallons for use in perfumery manufacture.

ROSEMARY HAIR-WASH.

Rosemary water,	1 gallon.
Rectified spirit,	½ pint.
Pearlash,	1 oz.

Tinted with brown coloring.

BAY RUM.

This is a very good hair-wash. It was first introdeced in New York by those go-ahead scissors, that "abbreviate" the "crown of glory."

Tincture of bay leaves,	5 oz.
Otto of bay,	1 drachm.
Bicarbonate of ammonia,	1 oz.
Biborate of soda (borax),	1 oz.
Rose-water,	1 quart.

Mix and filter.

ATHENIAN WATER.

Rose-water,	1 gallon.
Alcohol,	1 pint.
Sassafras wood,	¼ lb.
Pearlash,	1 oz.

Boil the wood in the rose-water in a glass vessel; then, when cold, add the pearlash and spirit.

VEGETABLE OR BOTANIC EXTRACT.

Rose-water, Rectified spirit,	of each,	2 quarts.
Extrait de fleur d'orange, " jasmine, " acacia, " rose, " tubereuse,	of each,	¼ pint.
Extract of vanilla,		½ pint

This is a very beautifully scented hair-wash. It retails at a price commensurate with its cost.

ASTRINGENT EXTRACT OF ROSES AND ROSEMARY.

Rosemary water,	2 quarts.
Esprit de rose,	½ pint.
Rectified spirit,	1½ pint.
Extract of vanilla,	1 quart.
Magnesia, to clear it,	2 oz.

Filter through paper.

GLYCERINE AND CANTHARIDES LOTION.

(For the Hair, if falling off.)

Mr. Startin has published the following, which is stated to be of great service.

Rosemary water,	1 gallon.
Spirits of sal volatile,	1 oz.
Tincture of cantharides,	2 oz.
Glycerine,	4 oz.

To be used with a sponge or soft hair-brush twice a day.

LOTION FOR THE HAIR, *as recommended by Dr. Locock.*

Liquor of ammonia, Oil of sweet almonds, } of each,	2 drachms.
Spirits of rosemary,	1 oz.
Otto of mace,	½ drachm.
Rose-water,	2½ oz.

First, mix the almond oil with the ammonia; then, having added the otto of mace (essential oil of mace) to the rosemary, shake these up with the oil and ammonia; finally, add the rose-water by degrees.

It is used as a lotion, and applied once a day at the toilet hour. This compound is a stimulant, and was made at the suggestion of her majesty's physician for promoting the growth of the hair, and preventing its falling off.

Saponaceous Wash, or Egg Julep.

Rectified spirit,	1 pint.
Rose-water,	1 gallon.
Extract of rondeletia,	½ pint.
Transparent soap,	½ oz.
Hay saffron,	½ drachm.

Shave up the soap very fine; boil it and the saffron in a quart of the rose-water; when dissolved, add the remainder of the water, then the spirit, finally the rondeletia, which is used by way of perfume. After standing for two or three days, it is fit for bottling.

By transmitted light, it is transparent; but by reflected light the liquid has a pearly and singularly wavy appearance when shaken.

Bandolines.

Various preparations are used to assist in dressing the hair in any particular form. Some persons use for that purpose a hard pomatum containing wax, made up into rolls, called thence *Bâton Fixateur.* The little "feathers" of hair, with which some ladies are troubled, are by the aid of these bâtons made to lie down smooth. For their formula, see p. 317.

The liquid bandolines are principally of a gummy nature, being made either with Iceland moss, or linseed and water, variously perfumed, also by boiling quince-seed with water. Perfumers, however, chiefly make bandoline from gum tragacanth, which exudes from a shrub of that name which grows plentifully in Greece and Turkey.

Rose Bandoline.

Gum tragacanth,	6 oz.
Rose-water,	1 gallon.
Otto of roses,	½ oz.

Steep the gum in the water for a day or so. As it swells and forms a thick gelatinous mass, it must from time to time be well agitated. After about forty-eight hours' maceration, it is then to be squeezed through a coarse clean linen cloth, and again left to stand for a few days, then passed through the cloth a second time, to insure uniformity of consistency; when this is the case, the otto of roses is to be thoroughly incorporated.

The cheap bandoline is made without the otto; for colored bandoline, it is to be tinted with ammoniacal solution of carmine, *i. e.*, *Bloom of Roses*. See p. 336; or with roseline for rose tint and aniline for violet tint.

ALMOND BANDOLINE.

Is made precisely as the above, scenting with a quarter of an ounce of otto of almonds in place of the roses.

CREME DE MAUVE, OR HAIR GLOSS.

This preparation serves the double purpose of a dressing for the hair and as a *fixateur*. It is especially made for giving gloss and brilliancy to the hair, when an engagement requires that the tresses and curls should appear particularly elegant, as at a ball, soirée, or the opera, and is made thus:

Pure glycerine,	4 lbs.
Spirit of jasmine,	1 pint.
Aniline,	5 drops.

In concluding this section, we now terminate our remarks on the manufacture of odorous substances, and their application to the toilet of fashion and beauty.

To be "in good odor" denotes moral purity. To employ a special odor, in its material sense, according to circumstances,—age, joy, sorrow,—is the suggestion of Dr. Andrew Wynter. "Why," says he, "should we not know our fair friends by the delicate odors with which they are surrounded, as we know them afar off by the charm of voice? There is an appropriate odor, to our minds, to each particular character. The spirituelle should affect jasmine; the brilliant and witty, magnolia; the robust, the more musky odors; and young girls just blooming into womanhood, the rose. The citron-like perfumes are more fitted for the melancholy temperament, and there is a sad minor note in heliotrope that the young widow should affect."

The great Creator, in addition to utility, has added beauty and variety in all his works. Flowers might have been of one color and the same odor, or they might have been colorless or inodorous.

Yet what exquisite beauty and diversity of perfume is there in plants and flowers! The love of this beauty and perfume is universal. Man is adapted to appreciate the gifts which the beneficent Creator has spread before him in such rich variety; the gratification arising from this enjoyment, as it is among the most innocent and purest, so is it the most pleasing and permanent that he enjoys.

The great Teacher, when speaking of the lilies, says that "Solomon in all his glory was not arrayed like one of these;" and when setting forth his own excellences and glory says, "I am the Rose of Sharon."

* * *

"Nor the sweet smell
Of different flowers in odor and in hue
Can make me any longer story tell."

SHAKSPEARE.

SECTION XIX.

OF THE COLORS USED BY PERFUMERS.

THE various toilet requisites manufactured by the perfumer must not only smell nicely, produce a pleasing sensation to touch, but they must also gratify the eye,—in fact, they must be "pretty;" this effect is gained by the addition of color.

The colors employed must be in harmony and appropriate to the article to which it is applied. Thus, *Rose* mouth-wash should be tinted of a beautiful blush color; *Savon de Tridace*, or lettuce soap, is to be colored green; and so on. The proper occasion to employ color does, however, in a measure rest with the taste of the *chef* of the laboratory; and so long as the color of the article is in unison with the idea of its nature; there is no objection to its free employment, provided the coloring matter is of a harmless character when applied to the skin.

In this respect modern perfumers have considerable advantage over their predecessors: chemistry has supplied them with colors not only rich in tint, but of a harmless nature; nay, more, for we can now color certain substances of tints, which, but so short time ago as when the first edition of this work was published, it was impossible to accomplish. Up to the time of Mr. Perkins's patent for the application of aniline, and its derivatives, to dyeing, there were but very few organic substances applicable for coloring perfumery. Mineral colors of course there are plenty; but the majority of them are of a poisonous nature, and cannot therefore be employed in the laboratory of a perfumery factor. Under the name of the color, the several substances that can be so tinted will be mentioned.

GREEN.—*Alcohol* may be colored green by infusing in it the dried leaves of almost any plant or herb,—the leaves of spinach, sage, grass, hay, and numerous others, being either sun-dried, or artificially dried with a current of warm air, and then put into the spirit, will color it of various beautiful shades of green. The pomades of violet and acacia also color spirit green by maceration, but the more beautiful the tint as a rule the older is the pomade or the tincture; fresh spirit of acacia or violet is of a brown-green tint, but if it has been prepared for some time, being more or less exposed to the air, then it passes to a spring-grass green color, and the perfume is deteriorated.

Green-colored perfumery is much admired; hence a little acacia is often used in a bouquet on account of its tint.

Oil and *pomades* may be colored GREEN thus: dried spinach or other leaves are put into rectified spirits of wine; the spirit rapidly dissolves out the green coloring matter of the plants, called chlorophylle: the spirit being then pressed away from the spent leaves, is to be put on to more leaves, and again pressed out when the coloring is dissolved: this operation repeated several times with the same spirit, it will become of a rich deep green color, on account of its holding the chlorophylle in solution. When the quantities operated upon are large, and it is essential to save the spirit, the tincture may be placed into a retort or still, and then distilled at a low temperature. Steam distillation is best. The green residuary extract that remains after the spirit is evaporated being now triturated with oil or fat, will color the grease of a pretty green.

Watery fluids, *milks*, &c., may be tinted of a beautiful GREEN with a green solution or dye recently introduced by Messrs. Judson, of Cannon Street.

Soap may be colored GREEN by making in the melting-pan a judicious mixture of soap, containing from seven pounds to fourteen pounds of new palm oil to every hundredweight of soap. This produces a good yellow body soap. To this we add one, two, or three ounces of blue smalt, or of ultramarine blue, mixed with half a pint of water. The blue color and the yellow soap produces, when crutched together, a vegetable green tint. Green soaps are sometimes produced with salts of copper, chromate of potass, and chromate of lead. These materials being all pernicious, manufacturers using them ought to be publicly fined.

Powders may be colored GREEN by employing the dried powders of fresh herbs, such as parsley, spinach, bay leaves, &c., mixed with starch.

YELLOW.—Saffron, palm oil, and turmeric, are the principal yellow stains used by perfumers.

Alcohol may be colored YELLOW, or rather of a beautiful uranium-glass tint, by the maceration of jonquil pomade; the pollen of the flowers in the first place imparts its tint to the grease, which, in turn, is given up to the spirit. Alcohol may be dyed yellow by infusing in it the turmeric root (*Curcuma longa* of India), the well-known condiment mixed in curry powder, &c.

Watery lotions and *emulsions* may be conveniently colored YELLOW with saffron, which consists of the stigmata of the yellow crocus blossom. Saffron-Walden, a town in Essex, received its prefix on account of the saffron gardens which at one time were extensively cultivated there.

Pomades are best colored YELLOW by jonquil pomade, rose pomade, or palm oil; the latter is the most economical, but the two former are far more agreeable to the smell. Rose pomade has a tint of a deeper yellow than the jonquil, but is not equal in coloring power to palm oil. The rose pomade receives its tint from the pollen of the roses, with which it is made in the same way as jonquil, *i. e.*, maceration, p. 70.

It is difficult to stain oils of almost any color except red and purple; we know of nothing that will color oil yellow artificially.

Palm "oil" being in fact not an oil at all in this country, but always more solid than butter and opaque, will not serve for coloring oil yellow.

RED, ROSE, VIOLET, and MAUVE,—all these tints may be conveniently considered together, because the mode of obtaining them is from one and the same source,—namely, aniline.

Alcohol receives from the variety of aniline colors all the shades a perfumer can desire; the smallest distinction in the shade of a color is sufficient to require a special name to indicate it. The two most famous tints which approach the rose and red in the aniline series are known as *Magenta* and *Solferino*, so named from the towns in Italy, where the battles were fought between the French, Piedmontese, and Austrians.

Oils, *fats*, *wax*, and *spermaceti*, may be easily colored RED with the roots of the *Anchusa tinctoria*, commonly called alkanet root, and for this purpose the plant is cultivated to a considerable extent in the south of France, about Montpellier, and also in Turkey in Asia.

In order to color oil, one, two, or three pounds of alkanet root are broken up and put into a vessel, which can be placed into hot or boiling water. The root is then covered with either olive or almond oil, and kept hot for several days; after which time the oil is strained away from the root, and preserved in a bottle under the name of "red coloring." If the color desired be not deep or intense enough, then the same oil must be put on to fresh root two or three times, or until, in fact, it is suitable to the desired wants.

A portion of "red coloring" thus made, is at all times convenient as a source or material to tint pomatums and oils of shades varying from rosy to crimson.

About 15,000 pounds of alkanet root are imported annually into this country.

Oils and other *greasy bodies* may be colored also of VARIOUS TINTS by agitating them with the alcoholic solution of all the aniline series,—solferino, mauve, &c. After the oils, &c., have taken up the color, the spirit must be dissipated with heat or subsidence; we are thus, for the first time, able to stain fatty bodies of various shades from violet to a blush rose.

Glycerine may also be colored of the most lovely tints by these coloring matters,—Simpson's MAGENTA, and Perkins's MAUVE, proving the most useful.

Watery fluids take the tints of mauve, magenta, solferino, to any shade.

Milks and *emulsions* take these colors well, if not kept too long; but if made some time, the coloring gradually subsides in combination with the amygdaline of the almond or pistachio-nut from which the emulsion is made.

REDDISH-BROWN.—*Alcohol* is best colored of a *red-brown* tint with rhatany root. Rhatany is the *Krameria triandra* of botanists, and is principally imported from Peru; there is, however, another variety of nearly similar properties that comes from the Antilles or Caribbee Islands,—this is the *Krameria ixina;* both are bushy shrubs, and are cultivated for the sake of the root, yielding as it does, a beautiful color to spirit, and on account of its flavor, extensively employed for making fictitious port wine; this root is also employed in tooth-powders, which see.

Another very good RED-BROWN tint is obtained in alcohol, by making a tincture of red santal-wood, or red sanders in the vernacular. Red sanders is the wood of the *Pterocarpus santalinus*, a tree natural to the Coromandel Mountains, largely imported for the use of dyers, together with another variety, *Pterocarpus flavus*, yellow sanders, which yields a yellow tint to spirit. Cedar-wood yields a good red tint to spirit, and is employed to some extent in liquid dentifrices by the French perfumers.

Soaps are colored of a red brown and dark brown, with powdered burnt sienna and umber; but neither of these is so well to employ, for many reasons, as the following:

BROWN.—Burnt sugar or molasses, boiled in an iron vessel to the burning-point, being dissolved in lime-water, is the "brown coloring" of perfumers, and "caramel" of confectioners. This coloring is suitable for tinting *soap* and *hair-washes* of any desired shade; but as it is not soluble in either grease or spirit, it does not impart color to them.

BLACK.—There is no true soluble black for either *water* or *spirit;* but Indian or Chinese ink remains suspended in these liquids longer than any other substance.

Grease and *soap* can only be colored BLACK, economically, with lampblack, first rubbed with oil, then added to the soap or grease in quantity sufficient to produce the desired shade. (See White and Brown Batons, page 317.)

SPONGE.—The best sponges imported are received from Smyrna, and from the shores of the islands in the Grecian Archipelago. When imported they are full of sand, and in this state it is the best way to purchase them; then afterwards to beat out the sand with a stick, and rinse them well in cold spring water. Nothing is better adapted for cleansing the skin than a good sponge; hence surgeons prefer it to any other material. In the regular way of using a sponge with soap for washing, they rapidly become *greasy*, and are then frequently thrown aside, before half worn out. The peculiar cellular fibrous tissue of sponge enables it to decompose the soap, retaining the grease and oil, which render it *slimy;* when such is the case, a lye of soda should be prepared, of the strength of half a pound of soda to half a gallon of water, and the sponge placed to soak in it for twenty-four hours; it should then be washed, and well rinsed in SPRING WATER, and afterwards in water containing a little muriatic acid (a wineglassful of the acid to half a gallon of water is strong enough). Finally, again rinse the sponge in plenty of spring water. The best sponge being worth from 40*s.* to 80*s.* per pound, renders it fully worth while to keep them clean. If trouble be taken to *well rinse* a sponge every time after using, the cleansing process will rarely be necessary.

The quantity of sponge imported into Great Britain in 1860:

	Quantity.	Computed Value.
	732,890 lbs.	£285,919
Exported,	273,588	48,095
Used at home,	459,302	£237,824

OTTOS FROM PLANTS.

QUANTITIES OF OTTOS, OTHERWISE ESSENTIAL OILS, YIELDED BY VARIOUS PLANTS.

	lbs.		of otto.
Orange-peel,	10	yield about	1 oz.
Dry marjoram herb,	20	"	3 "
Fresh " "	100	"	3 "
" Peppermint,	100	"	3 to 4 "
Dry "	25	"	3 to 4 "
" Origanum,	25	"	2 to 3 "
" Thyme,	20	"	1 to 1½ "
" Calamus,	25	"	3 to 4 "
Anise-seed,	25	"	9 to 12 "
Caraway,	25	"	16 "
Cloves,	1	"	2½ "
Cinnamon,	25	"	3 "
Cassia,	25	"	3 "
Cedar-wood,	28	"	4 "
Mace,	2	"	3 "
Nutmegs,	2	"	3 to 4 "
Fresh balm herb,	60	"	1 to 1½ "
Cake of bitter almond,	14	"	1 "
Sweet flag root,	112	"	16 "
Geranium leaves,	112	"	2 "
Lavender flowers,	112	"	30 to 32 "
Myrtle leaves,	112	"	5 "
Patchouly herb,	112	"	28 "
Provence rose blossom,	112	"	1½ to 2 drachms.
Rhodium-wood,	112	"	3 to 4 oz.
Santal-wood,	112	"	30 "
Vitivert or kuskus-root,	112	"	15 "
Violets,	112	"	½ drachm.

Boiling and Congealing Temperatures of various Ottos, &c.

(From "The Laboratory of Chemical Wonders.")

	Fahrenheit.
Almond oil will not boil,	+660°
Otto of patchouly boils,	+515°
" vitivert,	+548°
" santal-wood boils,	+550°
" cedar-wood "	+507°
" English lavender boils,	+475°
" lemon grass "	+440°
" rose (pure Turkish) boils,	+432°
" geranium (Spanish) "	+430°
" " (Indian) "	+420°
" gaultheria "	+400°
" almonds "	+356°
" bergamot (pure!) "	+370°
" caraway "	+348°
" lemon-peel } "	+345°
" orange " }	
" French lavender (spike),	+180°
" white wax melts,	+150°
" camphor sublimes,	+145°
" spermaceti melts,	+112°
" paraffine A,	+102°
" " B,	+ 90°
" otto rose (Ialian) congeals,	+ 62°
" " (Turkish), "	+ 58°
" geranium, neroli, cloves, deposit crystals,	+ 2°
" santal, cedar, lemon grass, congeal to a jelly,	— 5°
" bergamot congeals,	— 12°
" cinnamon still fluid,	— 13°

Appendix.

APPENDIX.

THE RASPBERRY JAM TREE, OR STINKING ACACIA (OF CENTRAL AND WESTERN AUSTRALIA) AND THE GUM WATTLE, OR FRAGRANT ACACIA OF SOUTH AUSTRALIA.

BY LOUIS PIESSE, CALCUTTA.

In my journey into Central Australia (starting from Adelaide), I noticed a species of Acacia growing in the dry, stony beds of some of the creeks (lat. 31° south, and long. 141° east), the blossom of which yielded such a putrescent odor, that it has received the name of the "Stinking Acacia."

The leaves yielded no sensible smell when fresh, but having cut down a few small branches and placed them in the shade, I noticed that in forty-eight hours they gave out a strong, unpleasant odor, something like rotten cabbage. I had some branches in my tent, in which the temperature varied from 100° to 110° Fahr., and as at the same time the air was intensely dry, it would appear that the odor is not easily eliminated.

A singular contrast was, however, exhibited in the wood, which, instead of partaking of the unpleasant smell of the blossoms or the leaves, was agreeably fragrant.

On my return to the settlements, I found that this species of Acacia, though unknown in South Australia, Melbourne, or New South Wales, was known in Western Australia as the "Raspberry Jam Acacia," from some supposed resemblance in the fragrance of the wood to the odor of that well-known preserve. The wood has obtained the colonial name of "Raspberry Jam Wood;" and the specimens from Swan River were very superior in fragrance to those from Central Australia. It is of a dark color, very similar in appearance to rosewood, very heavy, and sunk in water like a stone; and so hard when dry as to turn the edge of a saw or chisel.

The odor is probably due to the presence of a small portion of oil, as is the case with santal-wood, only not so *recherché*, and it remains yet to be seen if it can be turned to profitable account by the perfumer. Let us suppose that essential oil of "Raspberry Jam Wood," or some other extract could be obtained, it would not be a particularly pleasant perfume; but that does not militate against it; for the same may be said of musk, ambergris, and many others when pure.

The contrast between the odor of the blossom of the "Raspberry Jam Acacia," and the blossom of the well-known Gum Wattle (*Acacia decurrens*) is very remarkable. The former is sickly and about as fragrant as an old cabbage-stump; the latter is most agreeable and delicious—yes, it is most sweet! Many of the valleys to the south of Adelaide, every year as the season of blossoming returns, are redolent with the exquisite fragrance. This fragrance is, however, entirely in the blossoms, for the wood and leaves are scentless.

The Wattle, or fragrant Acacia, has been destroyed in nearly all the settled districts for the sake of the bark. That it might be profitably cultivated is beyond a doubt. 1st. It yields gall-berries of great utility in many branches of commerce. 2d. A most valuable perfume. 3d. A gum similar to gum Arabic. 4th. The bark is much valued by the tanner. 5th. It might be cultivated on land which also could be used for pasturage. 6th. The seed might be turned to some account. The seed is in pods similar to peas. Cockatoos are very fond of them. I noticed flocks of the beautiful rose-breasted cockatoos feeding off the seeds of the "Raspberry Jam Acacia" in Central Australia; and the white cockatoos in South Australia used to come in great numbers as regular as the season, and gorge themselves with the seeds of the Gum Wattle. I used to vary my dinner, which, from there being no fresh meat to be had, was chiefly of salt pork, with a roast of these fellows; but I cannot say much in their favor, even with the recommendation of an Australian appetite.

The gum of the fragrant Acacia is used as an article of food by the aborigines. I have used it myself, and advised its use by others when hard pressed, and found it extremely nutritious. It requires some little cooking and bolting to get it down, for otherwise you may get as hungry while eating as if eating walnuts. The natives would eat two to three pounds at a sitting.

The gum is the most valuable product, considered as an article of commerce. Some that I sent to England as a speculation, realized £60 per ton, and a portion £63 per ton. The bark realized £15 per ton. My agent, however, advised me that those prices could not be maintained. As the gum is four times the value of the bark, and is yielded annually; while the bark can only be obtained once (for the tree dies), it reminds one of the fable of killing the goose. A party of men and boys out "barking" would destroy a belt of Wattles a mile in length in a week; and they make no distinction as to whether they are growing on Crown or purchased land, so long as the owner is not located on it.

The gum is used by manufacturers to give an apparent thickness and superior quality to their goods; also by confectioners and many others. A wholesale stay-maker told me that it cost him £150 per annum for gum Arabic (which after all is chiefly obtained from Africa) merely to thicken and finish ladies' stays. The Australian savage eats the gum fresh and pure. Young England consumes it as a varnish or polish on his gingerbread and buns.

ON A MEANS OF DETECTING THE PRESENCE OF CASTOR OIL IN THE VOLATILE OILS.

ACCORDING to Mr. H. N. Draper, castor oil may be used to adulterate volatile oils, and if so used its presence could not be indicated by those means applicable to the detection of other fixed oils, on account of its solubility in alcohol. He has, therefore, devised a test for this oil, based on the production of œnanthylic acid. This body is a product of the oxidation of castor oil, and is formed when the warm oil is treated with an excess of nitric acid. A violent action ensues, during which much nitrous acid is disengaged, and there is found floating in the acid liquid, when the residue is mixed with water, a soft unctuous mass. If the acid liquid be neutralized with carbonate of soda, so as to entirely remove the odor of nitrous acid, the smell of the œnanthylic acid can be most clearly recognized. The mode of applying this test to the detection of castor oil in the volatile oils is as follows: Twenty drops of the suspected oil are placed in a capsule, and heated on a sand-bath, until the odor of the oil is no longer perceived. To the residue—if there be any—add five or six drops of nitric acid, and as soon as the action has subdued, dilute with solution of carbonate of soda. If castor oil be present, the odor will be at once perceived, and, once smelled, is not likely to be mistaken for any other. The author states that five per cent. of castor oil in a volatile oil can be thus detected.

[Santal and cedar otto are commonly adulterated with castor oil. —S. P.]

Detection of Fusel Oil in Spirit of Wine.

Chloride of calcium, in small pieces, is put into a beaker, and just enough of the suspected spirit is poured over to moisten the whole; the beaker is then covered with a glass plate and allowed to stand. In a short time, if fusel oil be present, the smell will be distinctly perceptible, and will become stronger and stronger on standing for some hours. In this way the least trace of fusel oil can be recognized; but when the quantity present is very small, the mixture must be left together longer before the experimenter smells it, and then the nose must be applied frequently at short intervals.

The impossibility of recognizing small quantities of fusel oil in spirit, depends upon the insensibility of the olfactory nerves produced by the vapor of alcohol. If we wish to smell fusel oil alone, we must prevent alcohol vapor from rising; this is best done by mixing the alcohol with chloride of calcium, which fixes it. Fusel oil also combines with chloride of calcium, but the combination is not odorless, while the alcohol is held so fast that it does not disturb the smell of the fusel oil.

[It will be observed, in both the above cases, and in others quoted in this Appendix, that, after all, *the nose*, the olfactory nerve, is the true analyzer.—S. P.]

Test for ascertaining the Presence of Alcohol in Essential Oils—Ottos.

J. J. Bernoulli recommends for this purpose acetate of potash. When to an ethereal oil, contaminated with alcohol, dry acetate of potash is added, this salt dissolves in the alcohol, and forms a solution from which the volatile oil separates. If the oil be free from alcohol, this salt remains dry therein.

Wittstein, who speaks highly of this test, has suggested the following method of applying it as the best: In a dry test-tube, about half an inch in diameter, and five or six inches long, put not more than eight grains of powdered dry acetate of potash; then fill the tube two-thirds full with the essential oil to be examined The contents of the tube must be well stirred with a glass rod, taking care not to allow the salt to rise above the oil; afterwards set aside for a short time. If the salt be found at the bottom of the tube dry, it is evident that the oil contains no spirit. Oftentimes, instead of the dry salt, beneath the oil is found a clear syrupy fluid, which is a solution of the salt in the spirit with which the oil was mixed. When the oil contains only a little spirit, a small portion of the solid salt will be found under the syrupy solution. Many essential oils frequently contain a trace of water, which does not materially interfere with this test, because, although the acetate of potash becomes moist thereby, it still retains its pulverulent form.

A still more certain result may be obtained by distillation in a water-bath. All the essential oils, which have a higher boiling-point than spirit, remain in the retort, whilst the spirit passes into the receiver with only a trace of the oil, where the alcohol may be recognized by the smell and taste. Should, however, a doubt exist, add to the distillate a little acetate of potash and strong sulphuric acid, and heat the mixture in a test-tube to the boiling-point, when the characteristic odor of acetic ether will be manifest, if any alcohol be present.

DETECTION OF POPPY AND OTHER DRYING OILS IN ALMOND AND OLIVE OILS.

IT is known that the olein of the drying oils may be distinguished from the olein of those oils which remain greasy in the air, by the first not being convertible into elaidic acid; consequently it does not become solid. Professor Wimmer has recently proposed a convenient method for the formation of elaidin, which is applicable for the purpose of detecting the adulteration of almond and olive oils with drying oils. He produces nitrous acid by treating iron filings in a glass bottle with nitric acid. The vapor of nitrous acid is conducted through a glass tube into water upon which the oil to be tested is placed. If the oil of almonds, or olives, contain only a small quantity of poppy oil, when thus treated, it is entirely converted into crystallized elaidin, whilst the poppy oil swims on the top in drops.

Coloring Matter of Volatile Oils.

BY G. E. SACHSSE.

It is well known that most ethereal oils are colorless; however there are a great number colored; some of which are blue, some green, and some yellow. Up to the present time the question has not been decided, whether it is the necessary property of ethereal oils to have a color, or whether their color is not due to the presence of some coloring matter which can be removed. It is most probable that their color arises from the presence of a foreign substance, as the colored ethereal oils can at first, by careful distillation, be obtained colorless, whilst later the colored portion passes over. Subsequent appearances lead to the solution of the question, and are certain evidence that ethereal oils, when they are colored, owe their color to peculiar substances which, by certain conditions, may be communicated from one oil to another. When a mixture of oils of wormwood, lemons, and cloves is subjected to distillation, the previously green-colored oil of wormwood passes over, at the commencement, colorless, while, towards the end of the distillation, after the receiver has been frequently charged, the oil of cloves distils over in very dense drops of a dark green color. It therefore appears that the green coloring matter of the oil of wormwood has been transferred to the oil of cloves.

Zeitschrift für Pharmacie.

Practical Remarks on Spirit of Wine.

BY THOMAS ARNALL.

The strength of spirit of wine is, by law, regulated by proof spirit (sp. gr. 920) as a standard; and accordingly as it is either stronger or weaker than the above, it is called so much per cent.

above or below proof. The term per cent. is used in this instance in a rather peculiar sense. Thus, spirit of wine at 56 per cent. over proof, signifies that 100 gallons of it are equal to 156 gallons of proof spirit; while a spirit at 20 per cent. underproof, signifies that 100 gallons are equal to 80 gallons at proof. The rectified spirit of the Pharmacopœia is 56 per cent. overproof, and may be reduced to proof by strictly adhering to the directions there given—viz., to mix five measures with three of water. The result, however, will not be eight measures of proof spirit; in consequence of the *contraction* which ensues, there will be a deficiency of about ℥iv in each gallon. This must be borne in mind in preparing tinctures.

During a long series of experiments on the preparation of ethers, it appeared a desideratum to find a ready method of ascertaining how much spirit of any density would be equal to one chemical equivalent of absolute alcohol. By a modification of a rule employ by the Excise, this question may be easily solved. The Excise rule is as follows:

To reduce from any given strength to any required strength: *Add* the *overproof* percentage *to* 100, *subtract* the *underproof* percentage *from* 100; multiply the result by the quantity of spirit, and divide the product by the number obtained by *adding* the *required* percentage overproof, or *subtracting* the *required* percentage underproof, to or from 100, as the case may be. The result will give the measure of the spirit at the strength required.

Thus, suppose you wished to reduce 10 gallons of spirit, at 54 overproof, down to proof, add 54 to $100 = 154$; multiply by the quantity, 10 gallons $(154 \times 10) = 1540$. The required strength being proof, of course there is nothing either to add to or take from 100; therefore, 1540 divided by $100 = 15.4$ gallons at proof; showing that 10 gallons must be made to measure 15 gallons, 3 pints, 4 fl. oz., by the addition of water.

To ascertain what quantity of spirit of any given strength will contain one equivalent of absolute alcohol. Add the overproof percentage of the given spirit to 100, as before; and with the number thus obtained divide 4062.184. The result gives in gallons the quantity equal to four equivalents (46×4).

Example.—How much spirit at 54 per cent. overproof is equal to 1 equivalent of absolute alcohol?

Here

$$54 + 100 = 154 \text{ and } \frac{4062.183}{154} = 26.3778 \text{ galls., or 26 galls. 3 pts.}$$

which, divided by 4, gives 6 gallons, 4 pints, 15 oz.

Suppose the spirit to be 60 overproof,

$$\text{then } \frac{4062.183}{100+60} = 25.388 \text{ gallons} \left\{ \begin{array}{l} \text{one-fourth of which is equal to 6 gal-} \\ \text{lons, 2 pints, } 15\tfrac{1}{2} \text{ oz.} \end{array} \right.$$

This rule is founded on the following data: as a gallon of water weighs 10 lbs., it is obvious that the specific gravity of any liquid will give the weight of one gallon. The specific gravity of absolute alcohol is .793811; hence, the weight of 1 gallon will be 7.93811 lbs., and its strength is estimated at 75.25 overproof.

$$4 \text{ equivalents of alcohol} = 46 \times 4 = 184,$$

and

$$23.17936 \text{ gallons} \times 7.93811 \text{ lbs. per gallon, also} = 184.0003094.$$

Hence it appears that 23.17936 gallons of absolute alcohol are equal to 4 equivalents. By adding the overproof percentage (75.25) to 100, and multiplying by the quantity (23.17936 gallons), we get the constant number 4062.183.

The rule might have been calculated so as to show *at once* the equivalent, without dividing by 4; but it would have required several more places of decimals: it will give the required quantity to a fraction of a fluid drachm.

[These remarks are very useful, and are the kind of observations so well suited to practical men.—SEPTIMUS PIESSE.]

A SIMPLE AND CERTAIN METHOD TO DETERMINE THE COMMERCIAL VALUE OF SOAP.

BY DR. ALEXANDER MULLER.

IN consequence of the tedious process by which the fatty acids are determined in one portion of the soap, and the alkali by the incineration of another, I consider the following method is not unworthy of publication, because it appears to afford quicker and more correct results by reason of the greater simplicity of the manipulation. It is available principally for soda soaps, which are the most common; but it may be also employed with corresponding alterations for soaps which have other bases.

A piece of soap weighing two or three grammes is dissolved in a tared beaker-glass of about 160 cubic centimetres capacity with 80 to 100 cubic centimetres of water, by heat, in a water-bath, and then three or four times the quantity of diluted sulphuric acid, or as much as is necessary to decompose the soap, added from a burette. When, after repeated agitation, the fatty acids have separated in a transparent clear stratum from the aqueous solution, it is allowed to cool, and then the contents of the beaker-glass are placed in a moistened filter, which has been previously dried at 212° Fahr. and weighed. The contents of the filter are washed until their acid reaction disappears. In the meanwhile the beaker-glass is placed in a steam-bath, so that, it being already dry, it may support the washed and partly dry filter, which is laid on the mouth of the glass as if it were in the funnel. The fatty acids soon pass through the paper, and for the most part flow ultimately to the bottom of the beaker-glass; the increase of weight of which, after cooling, and the subtraction of the weight of the filter, gives the quantity of fatty acids present in the soap. A second drying and weighing is not necessary, if on the cold sides of the interior of the glass no damp is to be observed, which is occasioned by a trace of water still present. If the quantity of oxide of iron added to marble the soap is considerable, it may be easily found by incinerating the filter and determining the weight of the residue.

The fluid which runs from the fatty acids on the filter, which, with the washings, has been preserved in a sufficiently large beaker-glass, is colored with tincture of litmus and decomposed with a test alkaline solution until the blue color appears. The difference of the quantity of alkali required to neutralize the sulphuric acid, and the quantity of sulphuric acid used in the first instance, allows a calculation to be made as to the quantity of effective alkali in the soap, for example:

23.86 grms of soap (partly cocoanut-oil soap).
17.95 " fatty acids with filter.
04.44 " filter.

13.51 grms. of hydrates of fatty acids = 56.62 per cent.

28.00 cub. cent. of the diluted sulphuric acid applied for the decomposition of the soap, of which 100 cub. cent. represent 2.982 grms. of carbonate of soda.

17.55 cub. cent. of alkaline fluid, which were used for the saturation of the above acid, and of which 100 cub. cent. saturate an equal quantity of that acid.

10.45 cub. cent. of the sulphuric acid necessary for the alkali contained in the soap, representing 0.1823 grms. of soda = 7.34 per cent.

A determination of the alkali as a sulphate afforded in another portion of soap 9.57 per cent. of soda, because the sulphate of soda and chloride of sodium present in the soap gave up their alkali.

The alkaline fluid applied by me was a saccharine solution of lime, which can be naturally replaced by a solution of soda, and must be if the chloride of sodium and sulphate of soda mixed with the soap shall be determined in the following way:

The fluid again exactly neutralized with alkali is evaporated to dryness, and the residue gently heated to redness. As in the above manipulation the fluid was not heated to the boiling-point, the original chloride of sodium and sulphate of soda are contained in the weighed residue, besides the soda of the soap and that which has been added with the sulphuric acid, forming sulphate of soda. A second exposure to a red heat with sulphuric acid converts the whole residue into sulphate of soda, and from the increase of weight, by a comparison of the equivalents of $NaCl$ and NaO, SO^3, the quantity of the former may be decided. According to the equivalents which Kopp furnished in 1850, the increase of weight to the chloride of sodium is as 1 : 4.68. The original sulphate of soda must be, lastly, found by the subtraction of the same salt formed plus the calculated chloride of sodium from the first heated residue.

In practice, it is seldom necessary to proceed with the determination of the chloride of sodium and sulphate of soda, except with stirred and cocoanut-oil soaps; certainly less of the truth is seen if, after the above determination of the fatty acids and the effective alkali, the absent percentage of water is introduced in the calculation, than if the water is reckoned, which is never completely evolved from soap, even technically prepared at 302° Fahr., and another determination made of the fatty acids or alkali *en bloc* the fatty acids, or even the alkaline contents.

The method here given partakes of the usual imperfections, that the fatty acids as well as the unsaponified soap are equally estimated, and the mixed hydrate or carbonate of the alkali as well as the combined alkali. The presence of the carbonate can be easily recognized by the foaming of the soap solution upon the addition of the sulphuric acid. These imperfections, however, are of little importance.

It must be granted that the minutely correct determination of the constitution of soap must be always yielded up to those who are technically conversant with this department of chemistry, the estimation of free alkali and unchanged fat included in it, at least, by certain ages of the soap. Further, a considerable excess of one or another ingredient soon betrays itself by a corresponding departure, from the soap, of the characteristic properties of a good product: a small excess can be judged sufficiently exact from the proportion of the alkali, which, supposing soda present, should not amount to more than 13 per cent. with a pure cocoanut-oil soap, not less than 11.5 per cent. with a tallow soap; but with palm oil and mixed soaps the one or the other limit approximates.—*Journal für praktische Chemie.*

Estimation of Soap.

Dr. Buchner gives (*Polytechnisch Centralblatt*, 1860, S. 1484) a method by which the amount of hard soap in a specimen can be calculated from the amount of fatty acid obtained when a given amount of the specimen is decomposed by a strong acid. The author makes use of a flask, the neck of which is graduated into cubic centimetres; into this flask, half full of water, he puts half an ounce of soap and dissolves it. He then adds the acid, either commercial hydrochloric, or dilute sulphuric acid, and warms the mixture, whereupon the fatty acids are set free. He now puts sufficient water to allow him to read off the number of cubic centimetres the acids measure in the neck of the flask. The fatty acids, from different sources, differ a little in weight; but the author found that the average weight of a cubic centimetre is .93 gramme, which is near enough to the truth for ordinary practical purposes. As the acids are combined with $\frac{1}{16}$ glycerine, it is easy, knowing the weight of the acids, to calculate the weight of the fat used; and as on the average 100 lbs. of fat give 155 lbs. of good hard soap, the weight of the real soap can be calculated when the weight of the fat is known. These calculations may be made by the use of a table which the author has constructed, from which we extract the important parts. The results are not to be considered scientifically accurate, but are near enough to the truth for ordinary business purposes. The process requires only one weighing, is executed in a few minutes, and is so simple that it can be performed by a common workman.

I. Cubic centimetres of fat acids separated from half an ounce of soap.

II. Percentage of water, lye, glycerine, &c., in the specimen.

III. Percentage of good hard soap.

I.	II.	III.
½	97	3
5	69	31
6	63	37
7	57	43
8	51	49
9	44	56
10	38	62
11	32	68
12	26	74
13	20	80
14	13	87
15	7	93

On the Value of Different Kinds of Soap.

BY R. GRAEGER.

Complaints of consumers in regard to the value, or rather efficacy, of samples of soap, which to the best of the manufacturer's knowledge have been well prepared, are not uncommon.

It is very probable that the usual explanation which is offered, whenever a soap fails to fulfil the expectations of its consumer, viz., that it contains too much water, may be in many cases correct. Admitting this, and various other contingencies, which are of importance in deciding upon the value of a soap, there appears to be another obvious reason why different soaps, containing equal amounts of water, may still possess different degrees of efficacy.

It is evident, from the different equivalent weights of the various fatty acids, that the amounts of caustic alkali, taken up by them in the formation of soap, must be of unlike magnitude.

If it be true, that the detergent power of soap is entirely dependent upon the amount of alkali which it contains, of course, it follows that those soaps which contain the largest proportion of alkali,—or, in other words, those containing a fatty acid the equivalent weight of which is small,—must be the most efficacious.

Since the difference between the equivalents of the common fatty acids is not large, these considerations are perhaps of little or no importance, in so far as concerns the consumption of soap in household economy—the total amount used in a single family being but small. In a manufacturing establishment, however, where fifty or a hundred thousand pounds of soap may be used in the course of a year, differences which cannot be deemed insignificant must exhibit themselves.

For example, the equivalent weights of several soaps (regarded as anhydrous), in common use, are as follows:

Oleic acid (red oil) soap, ... = 3800.95
Palm oil, ... = 3588.85
Tallow, ... = 3300.95
Cocoanut oil, ... = 3065.45

Calculating from these weights how much of each of the other soaps would be required to replace 1000 pounds of tallow soap, the following quantities will be found:

Pounds of		Per cent.		
1151 oleic acid soap,	*i. e.*,	15.1	more than	tallow soap.
1087 palm oil,	"	8.7	"	"
928 cocoanut oil	"	7.2	less than	"

Differences like these must certainly be of importance in practice; and could, doubtless, be detected by direct experiment, if any one would undertake a comparison of the various kinds of soap—a research which would not be easy, however.—*Bœttger's polytechnisches Notizblatt.*

PERFUMES AS PREVENTIVES OF MOULDINESS.

AN interesting paper on this subject has been published by Dr. Macculloch. We presume our readers are aware that mouldiness is occasioned by the growth of minute vegetables. Ink, paste, leather, and seeds, are the substances that most frequently suffer from it. The effect of cloves in preserving ink is well known; any of the essential oils answer equally well. Leather may be kept free from mould by the same substances. Thus Russian leather, which is perfumed with the tar of birch, never becomes mouldy; indeed, it prevents it from occurring in other bodies. A few drops of any essential oil are sufficient also to keep books entirely free from it. For harness, oil of turpentine is recommended. Bookbinders, in general, employ alum for preserving their paste; but mould frequently forms on it. Shoemakers' resin is sometimes also used for the same purpose; but it is less effectual than oil of turpentine. The best preventives, however, are the essential oils, even in small quantity, as those of peppermint, anise, or cassia, by which paste may be kept almost any length of time; indeed, it has, in this way, been preserved for years. The paste recommended by Dr. Macculloch is made in the usual way, with flour, some brown sugar, and a little corrosive sublimate; the sugar keeping it flexible when dry, and the sublimate preventing it from fermenting, and from being attacked by insects. After it is made, a few drops of any of the essential oils are added. Paste made in this way dries when exposed to the air, and may be used merely by wetting it. If required to be kept always ready for use, it ought to be put into covered pots. Seeds may also be preserved by the essential oils; and this is of great consequence, when they are to be sent to a distance. Of course moisture must be excluded as much as possible, as the oils or ottos prevent only the bad effects of mould.

INTRODUCTION OF HYDROGEN INTO ESSENTIAL OILS. CHANGE OF ONE OTTO INTO ANOTHER.

ZININ (*Bulletin de St. Petersburg*, T. iii, p. 529), and Kolbe (*Annal. der Chem. und Pharm.* Bd. cxviii, S. 122), have experimented on the direct addition of hydrogen to organic compounds. The latter digested a hot saturated solution of benzoic acid and a little hydrochloric acid with sodium amalgam, and in this way obtained bitter almond oil, another oil which becomes a crystalline solid on cooling, and a volatile acid. When the action takes place in an alkaline solution, the changes are different. No bitter almond oil is obtained nor the crystalline oil, but more of the new acid is formed, which Kolbe intends to investigate further.

Zinin's former researches on benzile showed that benzile might be converted into benzoin by the direct addition of hydrogen. He now shows that, by continuing the action longer, new bodies may be formed containing more hydrogen that benzoin. The author made a boiling solution of one part benzoin and three or four parts alcohol of 75 per cent., and to this he added one part of strong alcohol, saturated with hydrochloric acid gas, and then half a part of finely-granulated zinc was slowly introduced into the mixture. As soon as the violent reaction ceased, another half a part of the alcoholic solution of hydrochloric acid gas was added, and the mixture boiled down to a half. It was then poured off from the undissolved zinc and mixed with water, whereupon an oily body separated, which soon cooled into a crystalline mass, which was purified by recrystallization from alcohol. It was then obtained in rhombic tables, which fused at 55°. This new body is more hydrogenated than benzoin; but the elementary analysis, the author says, presents unusual difficulties. By the action of nitric acid, and of bromine on this new body, other crystallizable bodies are formed.

Bitter almond oil, dissolved in the alcoholic solution of hydrochloric acid and boiled with zinc, forms a thick oily body which sticks to the sides of the flask, and on cooling becomes solid and resinous. It is freely soluble in ether, and from the solution part crystallizes out, the remainder separates as an oily mass, in which after a time, other crystals form.

Artificial Preparation of Odors resembling the Fragrance of Certain Fruits.

Fusel Oil.

BY W. BASTICK.

This organic compound was first discovered by Scheele, as one of the distillation products of the wort obtained from the fermentation of potatoes. It has been subsequently examined by Pelletier, Dumas, Cahours, and others. It is generally now termed the hydrate of the oxide of amyl, from amyl being supposed to be its base or radical, as cyanogen is regarded to be the radical of another series of compounds.

It passes over towards the termination of the distillation process in a white turbid fluid, which consists of a watery and alcoholic solution of the fusel oil. The crude oil, consisting of about one half of its weight of alcohol and water, may be purified by being shaken with water and redistilled, with the previous addition of chloride of calcium. When the temperature of the contents of the retort reaches 296° Fahr., pure fusel oil distils over.

Fusel oil is a colorless oily fluid, which possesses at first not an unagreeable odor, but at last is very disgusting, producing oppression at the chest and exciting cough. It has a sharp, hot taste, and burns with a white-blue flame. It boils at 296° Fahr., and at a temperature of —4° Fahr. it becomes solid, and forms crystals. Its specific gravity at 59° Fahr. is 0.8124, and its formula $C_{10}H_{12}O_2$. On paper it produces a greasy stain, which disappears by heat, and when exposed to the action of the air it acquires an acid reaction. Fusel oil is slightly soluble in water, to which it imparts its odor; and soluble in all proportions in alcohol, ether, volatile and fixed oils, and acetic acid. It dissolves phosphorus, sulphur, and iodine without any noticeable change, and also mixes with caustic soda and potash. It rapidly absorbs hydrochloric acid, with the disengagement of heat. When mixed with concentrated sulphuric acid, the mixture becomes of a violet-red color, and bisulphate of amyloxide is formed. Nitric acid and chlorine decompose it. By its distillation with anhydrous phosphoric acid, a fluid, oily combination of hydrogen and carbon results. By oxidation with bichromate of potash and sulphuric acid, fusel oil yields valerianic acid, which is used in medicine, and apple-oil, employed as a flavoring ingredient in confectionery.

ARTIFICIAL ESSENCE OF PINEAPPLE.

BY W. BASTICK.

THE above essence is, butyric ether more or less diluted with alcohol: to obtain which pure, on a large scale and economically, the following process is recommended:

Dissolve 6 lbs. of sugar and half an ounce of tartaric acid, in 26 lbs. of boiling water. Let the solution stand for several days; then add 8 ounces of putrid cheese broken up, 3 lbs. of skimmed and curdled sour milk, and 3 lbs. of levigated chalk. The mixture should be kept and stirred daily in a warm place, at the temperature of about 92° Fahr., as long as gas is evolved, which is generally the case for five or six weeks.

The liquor thus obtained is mixed with an equal volume of cold water, and 8 lbs. of crystallized carbonate of soda, previously dissolved in water, added. It is then filtered from the precipitated carbonate of lime; and the filtrate is to be evaporated down to 10 lbs., then 5½ lbs. of sulphuric acid, previously diluted with an equal weight of water, are to be carefully added. The butyric acid, which separates on the surface of the liquid as a dark-colored oil, is to be removed, and the rest of the liquid distilled; the distillate is now neutralized with carbonate of soda, and the butyric acid separated as before, with sulphuric acid.

The whole of the crude acid is to be rectified with the addition of an ounce of sulphuric acid to every pound. The distillate is then saturated with fused chloride of calcium, and redistilled. The product will be about 28 ounces of pure butyric acid. To prepare the butyric acid, or essence of pineapple, from this acid, proceed as follows: Mix, by weight, three parts of butyric acid with six parts of alcohol, and two parts of sulphuric acid in a retort, and submit the whole, with a sufficient heat, to a gentle distillation, until the fluid which passes over ceases to emit a fruity odor. By treating the distillate with chloride of calcium, and by its redistillation, the pure ether may be obtained.

The boiling-point of butyric ether is 238° Fahr. Its specific gravity, 0.904, and its formula, $C_{12}H_{12}O_4$, or $C_4H_5O + C_8H_7O_3$

Bensch's process, above described, for the production of butyric acid, affords a remarkable exemplification of the extraordinary transformations that organic bodies undergo in contact with ferment, or by catalytic action. When cane sugar is treated with tartaric acid, especially under the influence of heat, it is converted into grape sugar. This grape sugar, in the presence of decomposing nitrogenous substances, such as cheese, is transformed in the first instance into lactic acid, which combines with the lime of the chalk. The acid of the lactate of lime, thus produced, is by the further influence of the ferment changed into butyric acid. Hence, butyrate of lime is the final result of the catalytic action in the process we here have recommended.

PREPARATION OF ARTIFICIAL ESSENCE OF QUINCE.

BY DR. R. WAGNER.

It has been believed, until the most recent period, that the peel of quinces contain œnanthylate of ethyloxide. New researches, however, have led to the supposition that the odorous principle of quinces is derived from the ether of pelargonic acid. In my last research on the action of nitric acid on oil of rue, I found that besides the fatty acids, which Gerhardt had already discovered, pelargonic acid is formed. This process may be advantageously employed for the preparation of crude pelargonate of ethyloxide, which, on account of its extremely agreeable odor, may be applied as a fruit essence equally with those prepared by Dobereiner, Hofmann, and Fehling. For the preparation of the liquid, which can be named the essence of quince, oil of rue is treated with double its quantity of very diluted nitric acid, and the mixture heated until it begins to boil. After some time two layers are to be observed in the liquid: the upper one is brownish, and the lower one consists of the products of the oxidation of oil of rue and the excess of nitric acid. The lower layer is freed from the greater part of its nitric acid by evaporation in a chloride of zinc bath. The white flocks frequently found in the acid liquid, which are probably fatty acids, are separated by filtration. The filtrate is mixed with spirits, and long digested in a gentle heat, by which a fluid is formed which has the agreeable odor of quince in the highest degree, and may be purified by distillation.—*Journal für praktische Chemie.*

PREPARATION OF RUM-ETHER.

Take of black oxide of manganese, of sulphuric acid, each twelve pounds; of alcohol, twenty-six pounds; of strong acetic acid, ten pounds. Mix and distil twelve pints. The ether, as above prepared, is an article of commerce in Austria, being the body to which rum owes its peculiar flavor.—*Austrian Journal of Pharmacy.*

ARTIFICIAL ODOR OF PEARS.

BY M. FEHLING.

THIS is an alcohol solution of acetate of amyloxide, and acetate of ethyloxide. For its preparation, one pound of glacial acetic acid is added to an equal weight of fusel oil (which has been prepared by being washed with soda and water, and then distilled at a temperature between 254° and 284° Fahr.), and mixed with half a pound of sulphuric acid. The mixture is digested for some hours at a temperature of 254°, by which means acetate of amyloxide separates, particularly on the addition of some water. The crude acetate of amyloxide obtained by separation, and by the distillation of the liquid to which the water has been added, is finally purified by being washed with soda and water. Fifteen parts of acetate of amyloxide are dissolved with half a part of acetic ether in 100 or 120 parts of alcohol; this is the essence of pear, which, when employed to flavor sugar or syrup, to which a little citric or tartaric acid has been added, affords the flavor of bergamot pears, and a fruity, refreshing taste.

ON THE APPLICATION OF ORGANIC CHEMISTRY TO PERFUMERY.

BY DR. A. W. HOFMANN.

CAHOURS' excellent researches concerning the essential oil of *Gaultheria procumbens* (a North American plant of the natural order of the Ericinæ of Jussieu), which admits of so many applications in perfumery,* have opened a new field in this branch of industry. The introduction of this oil among compound ethers must necessarily direct the attention of perfumers† towards this important branch of compounds, the number of which is daily increasing by the labors of those who apply themselves to organic chemistry. The striking similarity of the smell of these ethers to that of *fruit* had not escaped the observation of chemistry; however, it was reserved to practical men to discover by which choice and combinations it might be possible to imitate the scent of peculiar fruits to such a nicety, that makes it probable that the scent of the fruit is owing to a natural combination identical to that produced by art; so much so, as to enable the chemist to produce from fruits the said combinations, provided he could have at his disposal a sufficient quantity to operate upon. The manufacture of artificial aromatic oils for the purpose of perfumery* is, of course, a recent branch of industry; nevertheless, it has already fallen into the hands of several distillers, who produce sufficient quantity to supply the trade; a fact, which has not escaped the observation of the Jury at the London Exhibition. In visiting the stalls of the English and French confectioners at the Crystal Palace, we found a great variety of these chemical perfumes, the applications of which were at the same time practically illustrated by confectionery flavored by them. However, as most of the samples of the oils sent to the Exhibition were but small, I was prevented, in many cases, from making an accurate analysis of them. The largest samples were those of a compound labelled "pear oil," which, by analysis, I discovered to be an alcoholic solution of pure acetate of amyloxide. Not having a sufficient quantity to purify it for combustion, I dissolved it with potash, by which free fusel oil was separated, and determined the acetic acid in the form of a silver salt.

---

* Qy. Confectionery?

† Qy. Confectioners?

0.3080 gram. of silver salt = 0.1997 gram. of silver.

The percentage of silver in acetate of silver is, according to

Theory	**Experiment**
64.68	64.55

The acetate of amyloxide, which, according to the usual way of preparing it, represents one part sulphuric acid, one part fusel oil, and two parts of acetate of potash, had a striking smell of fruit, but it acquired the pleasant flavor of the jargonelle pear only after having been diluted with six times its volume of spirit of wine.

Upon further inquiry, I learned that considerable quantities of this oil are manufactured by some distillers,—from fifteen to twenty pounds weekly,—and sold to confectioners, who employ it chiefly in flavoring pear-drops, which are nothing else but barley-sugar flavored with this oil.

I found, besides the pear oil, also an *apple oil*, which, according to my analysis, is nothing but valerianate of amyloxide. Every one must recollect the insupportable smell of rotten apples which fills the laboratory whilst making valerianic acid. By operating upon this raw distillate produced with diluted potash, valerianic acid is removed and an ether remains behind, which, diluted in five or six times its volume of spirits of wine, is possessed of the most pleasant flavor of apples.

---

* Qy. Confectionery?

The essential oil* most abundant in the Exhibition was the pineapple oil, which, as you well know, is nothing else but the butyrate of ethyloxide. Even in this combination, like in the former, the pleasant flavor or scent is only attained by diluting the ether with alcohol. The butyric ether, which is employed in Germany to flavor bad rum, is employed in England to flavor an acidulated drink called pineapple ale. For this purpose they generally do not employ pure butyric acid, but a product obtained by saponification of butter, and subsequent distillation of the soap with concentrated sulphuric acid and alcohol; which product contains, besides the butyric ether, other ethers, but nevertheless can be used for flavoring spirits. The sample I analyzed was purer, and appeared to have been made with pure butyric ether.

Decomposed with potash and changed into silver salt, it gave

0.4404 gram. of silver salt = 0.2437 gram. of silver.

The percentage of silver in the butyrate of silver is, according to

Theory	Experiment
55.38	55.33

Both English and French exhibitors have also sent samples of cognac oil and grape oil, which are employed to flavor the common sorts of brandy. As these samples were very small, I was prevented from making an accurate analysis. However, I am certain that the grape oil is a combination of amyl, diluted with much alcohol; since, when acted upon with concentrated sulphuric acid, and the oil freed from alcohol by washing it with water, it gave amylsulphuric acid, which was identified by the analysis of the salt of barytes.

1.2690 gram. of amylsulphate of barytes gave 0.5825 gram. of sulphate of barytes. This corresponds to 45.82 per cent. of sulphate of barytes.

Amylsulphate of barytes, crystallized with two equivalents of water, contains, according to the analysis of Cahours and Kekule,

---

* The writer means ether!

45.95 per cent. of sulphate of barytes. It is curious to find here a body, which, on account of its noxious smell, is removed with great care from spirituous liquors, to be applied under a different form for the purpose of imparting to them a pleasant flavor.

I must needs here also mention the artificial oil of bitter almonds. When Mitscherlich, in the year 1834, discovered the nitrobenzole, he would not have dreamed that this product would be manufactured for the purpose of perfumery, and, after twenty years, appear in fine labelled samples at the London Exhibition.* It is true that even at the time of the discovery of nitrobenzole, he pointed out the striking similarity of its smell to that of the oil of bitter almonds. However, at that time, the only known sources for obtaining this body were the compressed gases and the distillation of benzoic acid, consequently the extravagance of its price banished any idea of employing benzole as a substitute for oil of bitter almonds. However, in the year 1845, I succeeded, by means of the aniline-reaction, in ascertaining the existence of benzole in common coal-tar oil; and in the year 1849, C. B. Mansfield proved, by careful experiments, that benzole can be won without difficulty in great quantity from coal-tar oil. In his essay, which contains many interesting details about the practical use of benzole, he speaks likewise of the possibility of soon obtaining the sweet-scented nitrobenzole in great quantity. The Exhibition* has proved that this observation has not been left unnoticed by the perfumers. Among French perfumeries we have found, under the name of artificial oil of bitter almonds, and under the still more poetical name of "essence de mirbane," several samples of essential oils, which are no more nor less than nitrobenzole. I was not able to obtain accurate details about the extent of this branch of manufacture, which seems to be of some importance. In London, this article is manufactured with success. The apparatus employed is that of Mansfield, which is very simple: it consists of a large glass worm, the upper extremity of which divides in two branches of tubes, which are provided with funnels. Through one of these funnels passes a stream of concentrated nitric acid; the other is destined as a receiver of benzole, which, for this purpose, requires not to be quite pure; at the angle from where the two tubes branch out, the two bodies meet together, and instantly the chemical combination takes place, which cools sufficiently by passing through the glass worm. The product is afterwards washed with water, and some diluted solution of carbonate of soda; it is then ready for use. Notwithstanding the great physical similarity between nitrobenzole and oil of bitter almonds, there is yet a slight *difference in smell which can be detected by an experienced nose.* However, nitrobenzole is very useful in scenting soap, and might be employed with great advantage by confectioners and cooks, particularly on account of its safety, being entirely free from prussic acid.

---

* Of 1851.

There were, besides the above, several other artificial oils; they all, however, were more or less complicated, and in so small quantities that it was impossible to ascertain their exact nature, and it was doubtful whether they had the same origin as the former.

The application of organic chemistry to perfumery is quite new; it is probable that the study of all the ethers or ethereal combinations already known, and of those which the ingenuity of the chemist is daily discovering, will enlarge the sphere of their practical applications. The capryl-ethers lately discovered by Bouis, are remarkable for their aromatic smells (the acetate of capryl-oxide is possessed of the most intense and pleasant smell), and they promise a large harvest to the manufacturers of perfumes.

[If the word "*flavor*" had been used by the various authors who have written upon this subject, in the place of the word "perfume," and the word "*ether*" in place of "oil" and "essential oil," the dissemination of an erroneous idea would have been prevented; the word perfume, applied to pear oil, pineapple oil, &c., implies, and the general tenor of the remarks of the writers leads the reader to infer, that these substances are used by perfumers, who not only do not, but cannot, use them in their trade, because these artificial essences or ethers, when poured upon a handkerchief and held to the nose, act, as is well known, like chloroform, producing also most serious irritation of the air-pipes.

But for *flavoring* nectar, lozenges, sweetmeats, &c., these ethers, or oils as the writers term them, are extensively used, and quite in accordance with assertions of Hofmann, Playfair, Fehling, and Bastick. However, the glorious achievements of modern chemistry have not lost anything by this misapplication of a trade term.—SEPTIMUS PIESSE.]

INDEX.

Absorbent powders, 332
Absorption, 71
Acacia—cassie, 87
  sachet, 241
  pomade, 310
Acoustic automata, 48
Act of Parliament, singular, 30
Alcohol, test for, in essential oils, 372
Alhambra perfume, 219
Alloxan, 340
Allspice, 74
Almond cream, 277
  meal, 287
  paste, 286
  soap, 270
Almonds, otto of, 75
  artificial, 76
Amandine, 283
Ambre, extraite d', 185
Ambergris, 182
  essence, 185
Ambrette, grains d', 121
Ambrosial cream, 278
Ammonia, 204
Amour, bouquet d', 219
Analogy of color, sound, and smell, 39
Anise, 77
Annual produce of scents, 62
Anointing, 15, 19
Aromatic vinegar, 210
Astringent extract of roses and rosemary, 353
Athenian water, 352
Artificial odors, 381

Balm, 78
Balls, camphor, 300
Balls, soap, 268
  almond, 300
Balsam, 78
  of Tolu, 79
    to detect adulteration, in, 79
  of Mecca, 79
  of Peru, 140
  of Neroli, 314
  of flowers, 313
Bandoline, 354
Batons, white, 317
Bay, sweet, 80
  rum, 352
Bears' grease, 312
Ben or behn oil, 308
Benzoic acid, 82
Benzoin, or benjamin, 81
  flowers of, 82
  pomade and oil, 311
Bergamot, 80
Black cosmetic, 317
Blanc de perle, 335
Bloom of roses, 336
Blue for veins, 340
Blush, sympathetic, 340
Bookmarks, perfumed, 250
Bouquets of chord, G, C, F, 44
Bouquets, 217
  d'Amour, 219
  d'Andorre, 219
  Bosphorus, 219
  Buckingham Palace, 220
  Caroline, 220
  des Délices, 220
  Ess, 221
  Esterhazy, 221
  Guards, 225
  Hunt, 221

Bouquets, International, of all Nations, 232
    Isle of Wight, 232
    Jockey Club, 226
    Leap year, 232
    Maréchale, 230
    Montpellier, 231
    mousseline, 231
    Reine d'Angleterre, 233
    du Roi, 233
    Spring Flowers, 236
    West End, 238
    Yacht Club, 238
Botot, eau de, 348
Borax and myrrh, 347, 349
Breath lozenges, 350
Brier, sweet, 85
    essence of, 96
Brown cosmetic, 317
Brûler, eau à, 259

Camphor, 86
    balls, 300
    chalk, 346
    ice, 297
    paste, 301
    refined, 86
    soap, 270
Candles, fragrant, 20
Cannes, seat of the art, 52
Cantharides lotion, 353
Caprice de la mode, 231
Caraway, 85
Carmine, 337
Cascarilla, 85
Cassie, 87
    oil of, 88
    extract of, 88
Cassolettes, 251
Castor, 189
    oil cream, 313
        to detect, 371
Catharine II's rouge, 335
Cedar, 90
    extract, 91
Cedrat, 91
Cedria, 91
Censer, the, 252
Chapel Royal, frankincense, 21
Charcoal in pastils, 257
    tooth-powder, 346
Châssis en verre, 71
Cherry lip-salve, 302
    tooth-paste, 348
Chord of odors, 44
Chypre, eau de, 220
    sachet, 243
Cinnamon, 92
    artificial otto of, 92
Circassian cream, 313
Citron, 93
    zeste, 113
Citronella, 93
Civet, 185
    extract, 188
Clove-pink, 146
Cloves, 94
Cold cream, roses, 295
    almond, 297
    camphor, 297
    violet, 297
Cologne, eau de, 222
Coloring in volatile oils, 374
Colors, 357
    black, 363
    brown, 363
    brown-red, 362
    green, 358
    mauve, 360
    red, 360
    rose, 360
    violet, 360
    yellow, 359
Composition of perfumes discovered, 115
Consumption of perfumes, 59
Cosmetics, black, 317
    brown, 317
Court nosegay, the, 220
Crème de mauve, 355
Crystallized cream, 313
Cucumber, 95
    milk of, 293
    pomade, 299

Dandelion milk, 292
Dentifrice, 346
Depilatory, 330
    sulphuret of barium, 330
    hernandia, 331
Detection of castor oil, 371
    alcohol in otto, 372
    fusel oil, 372
    poppy oil, 373

Determine, the value of soaps, to, 379
Dill, 95
    water, 95
Discord of smells, 41
Distillation, 66
Diversity of perfume, 355
Divine, pomade, 300
Dry perfumes, 240
Drying house, 242
Duality of odor, 124
Dyes for the hair, 318

Earths, their odor, 49
Eau de botot, 348
    pour brûler, 259
    de Cologne, 222
    de Chypre, 220
    de luce, 207
    des millefleurs, 229
    de mousseline, 231
    de Portugal, 133
Economical scents, 175
Egg julep, 354
Eglantine, 96
Elder, 96
    milk of, 292
    water, 96
Emulsines, 283
    au jasmin, 287
    violette, 287
Emulsions, 289
Enfleurage, 71
Erin, flowers of, 224
Espagne, peau d', 248
Ess bouquet, 221
Essence of ambergris, 185
    almond, 77
    bay, 80
    bergamot, 80
    brier, sweet, 96
    cassie, 87
    castor, 189
    cedar, 91
    cedrat, 91
    civet, 188
    clove, 94
    cucumber, 95
    eglantine, 96
    geranium, 99
    heliotrope, 101
Essence of honeysuckle, 103
    hovenia, 104
    jasmine, 106
    jonquil, 107
    lavender, 111
    lemon, 113
    lilac, 117
    lily of valley, 118
    of magnolia, 119
    mignonette, 120
    musk, 202
    myrtle, 122
    narcissus, 124
    neroli, 126
    orange flower, 131
        peel, Portugal, 132
    orris, 134
    patchouly, 136
    pears, 387
    pea, sweet, 137
    peppermint, 138
    pineapple, 144, 384
    pink, clove, 146
    quince, 386
    rondeletia, 235
    rose de pommade, 151
        triple, 153
        white, 154
        twin, 153
        moss, 153
        tea, 154
        yellow, 154
    santal, 157
    tonquin bean, 165
    tuberose, 165
    vanilla, 167
    verbena, 168
    verveine, 169
    violet, pure, 171
        wood, 237
    wall-flower, 174
    winter green, 175
    volkameria, 173
Essential oil. See Essence, &c., also Otto, &c.
Esterhazy bouquet, 221
Estimation of soap, 379
Eugénie's nosegay, 221
Evelyn at Montpellier, 231
Exhibition of 1851, 74
Expression, 64
Extract. See Essence and Otto.

Face powder, 332
Farm of roses, 148
Fennel, 97
Flag, sweet, 97
Fleur d'Italie, 226
Flower farming statistics, 59
farms, 120
Flowers of Erin, 224
extract of, 225
of May, 232
of spring, 236
Flora bouquet, 225
Fountain finger-ring, 239
Frangipani, origin of, 22
plants at Kew, 98
sachet, 243
Frankincense at Chapel Royal, 21
at Westminster Abbey, 21
is olibanum, 130
Fullers' earth soap, 272
Fusel oil, to detect, 372
Bastick on, 383
Fumigating paper, 259
ribbon of Bruges, 261
Fumigation, antiseptic, 49

Gamut of odors, 42
Garland, the volunteers', 238
Gems, scenting, 250
Geranium-rosy, 99
Gloves, perfumed, 24
Glycerine jelly, 288
lotion, 294
bandoline, 294
balsam, 301
Golden hair powder, 331
rose and the Pope, 22
Grasse, seat of the art, 52
Grease, inodorous, 305
purifying, 307
Guards' bouquet, 225

Hair, change in color, 320
Marie Antoinette, 321
Orsini, 323
dyes, 318
Arabian, 319
litharge, 327
should be avoided, 323
Turkish, 326
with mordant, brown, 327
Hair wash, 351
astringent, 353
Athenian, 352
bay rum, 352
rosemary, 353
saponaceous, 353
vegetable, 352
Hay, new-mown, 224
Hediosmia, 100
Heliotrope, 100
extract of, 101
pomade, 315
sachet, 244
Henna, 319
Honey paste, 285
soap, 271
Honeysuckle, 103
essence of, 103
Hongroise pomade, 316
Hovenia, 104

Ice, camphor, 297
Incense, origin of the use, 252
powder, 255
Scripture simile, 14
Inodorous grease, 305
International bouquet, 232
Iris, 133
Isle of Wight bouquet, 232

Japanese perfume, 228
Jasmine, Alphonse Karr at sale of, 105
extract, 106
inimitable, 39
otto of, 105
Jelly, glycerine, 288
Jockey Club bouquet, 226
Jonquil, 107

Kew Garden nosegay, 229
Kisses, stolen, 229
Kohol, 325
Kus-kus, 172

Lait, virginal, 293
Lamp, the perfume, 258
Laurel, 108
Lavender, 108
cultivation of, 109
essence of, 112
millefleurs, 229

Lavender sachet, 244
    spike oil in, 112
    water, 112
Lemon, 113
    grass, 115
    purification of, 113
    scented, 116
Leap-year bouquet, 232
Lilac, white, 117
Lily, 117
    of the valley, 118
Lip salve, 301
    cherry, 302
    white, 301
Lisbon water, 133
Lotion, Dr. Locock's hair, 353
    cantharides, 353
    glycerine, 294
Louis XIV, his orange trees, 131
Lozenges, breath, 350
Lucullus and the rose, 150
Lustral fluid, 316

Mace, 118, 129
Maceration, 70
Magnolia, 119
Maréchale bouquet, 230
    sachet, 244
Marjoram, 119
Marren's experiments, 55
Marrow pomatum, 314
Mauve, crème de, 355
May flowers, 232
Meadow, sweet or queen, 119
Meal, almond, 287
    pistachio, 287
Mecca balm, 79
Medicated soaps, 280
Melissa, 78
Mercutio Frangipani, 26
Mignonette, 120
Millefleurs, eau des, 229
    lavender, 230
    sachet, 245
Milk baths, 33
Milk of nuts, 289
    almonds, 292
    cucumber, 293
    dandelion, 292
    elder, 292
    pistachio, 293
    roses, 290
Mint, 121
Miribane, 76
Mock orange, 163
Mode, caprice de la, 231
Montpellier bouquet, 231
    Evelyn at, 231
Mouldiness, perfumes prevent, 381
Mousseline des Indes, 172
    eau de, 231
Mouth-washes, 343
    botot, 348
    camphorated Cologne, 349
    myrrh and borax, 349
    styptic, 349
    violet, 348
Musc, extrait de, 202
Musk, 189
    as a medicine, 190
    Assam, 202
    deer, 191
    cabardien, 202
    Empress Josephine's, 201
    extract, 202
    grub, 196
    habits and life, 195
    sachet, 244
    seed, 121
Myrrh, 122
    otto of, 123
    tooth-powder, 347
Myrtle, 122

Nail powder, 341
Naples soap, 278
Narcissus, 124
Neroli, petal, 124
    bigarade, 126
    esprit, 126
    origin of the term, 128
Neutralization of odors, 47
New-mown hay, 224
Njavi oil, 303
Nocturnal flowers, 56
Nosegay, the court, 220
    Eugénie's, 221
    Kew Garden, 229
    tulip, 237
Nutmeg, 128

Octaves of odors, 38
Odoriferous species of plants, 57

Odors, artificial, 387
  gamut of, 42
  theory of, 37
Oil of behn, 308
  njavi, 303
Oiling the hair, 304
Oils, essential. See Otto, &c., and Essence, &c.
Ointment, the precious, 19, 303
Olfactory nerve, tutoring the, 234
Olibanum, 130
Olivine, 285
Olla podrida sachet, 246
Opiate tooth paste, 348
Orange flower, 126
  essence of, 132
  water, 127
Orangery at Sydney, 127
Origin of perfumery, 14
Orris, extract of, 134
Osselets of Cyprus, 253
Otto of allspice, 74
  almond, 76
  anise, 77
  balm, 78
  bay, 80
  bergamot, 80
  caraway, 85
  cascarilla, 85
  cassia, 87
  cedar, 90
  cinnamon, 92
  citron, 93
  citronella, 93
  cloves, 94
  cucumber, 95
  eucalyptus, 116
  gaultheria, 174
  geranium, 99
  jasmine, 105
  kuskus, 172
  lavender, 109
  lemon, 114
  lemon-grass, 115
  mace, 118
  marjoram, 119
  meadow sweet, 119
  mint, 121
  myrrh, 123
  neroli, 124
  nutmeg, 130
  patchouly, 135
Otto of peppermint, 139
  pimento, 145
  Portugal, 133
  rhodium, 146
  rose, 148
  rosemary, 154
  rosewood, 146
  rue, 156
  santal, 158
  thyme, 163
  verbena, 116, 168
  vitivert, 173
  winter-green, 175
Otto, the odorous principle, 217
  changed, 382
  not an oil, 218
  pipette, 65
  rose soap, 276
Ottos, quantity imported, 180
  boiling and congealing, 366
  yielded by plants, 365

Palm, 134
Paper, perfumed letter, 250
  fumigating, 259
Paraffine, 309
Paste, almond, 286
  honey, 286
  pistache, 287
Pastil's, Piesse's, 256
  yellow, 254
Patchouly, 135
  origin of its use, 136
  sachet, 245
Pea, sweet, 137
Peau d'Espagne, 248
Pears, essence of, 387
Pencil water, 329
Peppermint, 138
Percolating process, 178
Perfume lamp, 258
  Alhambra, 219
  a Japanese, 228
Perfumed bookmarks, 250
Perfumes, first introduced, 31
  in all climates, 51
Per fumus, 253
Pistachio nut meal, 287
  milk, 293
Peru, balsam of, 140
Petit grain neroli, 126
Piesse, twin rose, 153

Piesse, posy, 236
Pimento, 145
Pineapple, 144
  essence, 384
Pink, 146
  essence of clove, 146
  saucers, 339
  wool, 339
Pipette, 65
Pneumatic process, 178
Pomade acacia, 310
  baton, 317
  bears' grease, 312
  benzoin, 311
  castor oil, 313
  Circassian, 313
  cosmetics, 317
  crystallized, 313
  divine, 300
  of flowers, 313
  hard stick, 317
  heliotrope, 315
  hongroise, 316
  jasmine, 106
  lustral, 316
  marrow, 314
  millefleur, 315
  of neroli, 314
  orange, 125
  origin of term, 304
  philocome, 315
  rose, 151
  tonquin, 311
  tuberose, 165
  vanilla, 311
  violet, 171, 314
Pomatum, washed, 89
Portugal, eau de, 133
  sachet, 245
Posy, Piesse's, 236
Pot-pourri sachet, 246
Powder, absorbent, 332
  blanc, 334
  face, 332
  golden hair, 331
  nail, 341
  pistachio nut, 333
    toilet, 333
  puffs, 332
  rose, 334
  for sachets, 241
  tooth, 343
Powder, violet, 333
Powerful odors become inodorous, 46
Precious ointment, 303
Press, oil and tincture, 65
Preston salts, 207
Printaniers, 251
Purifying grease, 306

Queen Elizabeth's perfumes, 29
Quince, essence of, 386
Quinine dentifrice, 346

Raspberry jam tree, 365
Rezeda, 120
Rhodium, 146
Ribbon of Bruges, 261
Ring, fountain, 239
Roi, bouquet du, 233
Rondeletia, 233
  essence, 235
Rose, 147
  attar of, 148
  bloom of, 336
  cold cream, 295
  esprit, 153
  essence of, Chinese, 154
    moss, 153
    tea, 154
    white, 154
  face powder, 334
  farms, 148
  milk of, 290
  pickled, 152
  Piesse's twin, 153
  pomade, 151
  sachet, 246
  soap, 261
  vinegar, 212
  water, 152
  wine, 147
  wood, 147
Rosemary, 154
  water, 155
Rouges, 339
Rue, 155
  in Newgate, 156
Rum, bay, 352
Rum-ether, 386
Rusma, 330
Rypophagon soap, 278

Sachet powders, 241
  acacia, 241
  Chypre, 243
  frangipani, 243
  heliotrope, 244
  lavender, 244
  maréchale, 244
  millefleur, 245
  mousseline, 245
  "no name," 247
  olla podrida, 246
  patchouly, 245
  Portugal, 245
  pot-pourri, 246
  rose, 246
  verveine, 247
  violet, 248
  vitivert, 247
Sage, 156
Salts, crystal, 205
  inexhaustible, 204
  Preston, 207
  smelling, 204
Sand soap, 271
Santal, 156
  extrait de, 158
  sachet, 246
  wood, 156
Saponaceous cream, 277
Sassafras, 159
Scenting gems, 250
  shells, 251
Schnouda, 340
Scripture, perfumes mentioned in, 17
Secretion of odor, 54
Sensitiveness of the olfactories, 40
Spike, 159
Spikenard, 159
Smelling neglected, 36
  salts, 204
Snuff, 208
Soap, almond, 270
  at Pompeii, 262
  ball scoop, 268
  camphor, 270
  Castile, 264
  citron, 277
  curd, 264
  estimation of, 379
  excise duty on, 263
Soap frame and gauges, 266
  frangipani, 277
  fullers' earth, 272
  honey, 271
  juniper tar, 281
  marine, 264
  medicated, 280
  melting-pan, 266
  musk, 276
  Naples, 278
  noticed in Scriptures, 262
  oil, 265
  orange, 276
  palm, 265
  patchouly, 277
  plants, 282
  press and die, 269
  powder, 278
  remelting, 265
  rose, 276
  rypophagon, 278
  sand, 271
  santal, 276
  spermaceti, 276
  soft, 265
  stone, 282
  transparent soft, 279
    hard, 279
  value of, 380
  Windsor, white, 271
    brown, 271
  yellow, 265
Soaps, scented cold, 273
  all colors, 275
Soaping the plane, 273
Socrates on scents, 16
Sponge, 363
Spirit, Arnall on, 374
  grape and corn, 223
  the right to use, 227
Spring flowers, 236
Statistics of flower farming, 59
Still-room, 31, 35
Stills, French, 67
  syphon, 68
Storax, 159
  tincture of, 162
Stolen kisses, 229
Styptic botanic, 349
Suave, 236
Suffitus, 253
Sumbul, 121

Swans'-down puffs, 332
Sweetbrier, 96
Sweet pea, 187
Syphon still, 68
Syringa, 163

Talc, calcined, 336
Tap funnel, 66
Temple, Sir W., essays of, 32
Thyme, 163
Toilet vinegar, 214
Tolu, balsam of, 79
Tonquin bean, 164
  extract, 165
Tooth-paste, 348
Tooth-powders, 343
  borax and myrrh, 347
  camphorated chalk, 346
  charcoal, 346
  cuttle-fish, 347
  farina, Piesse's, 347
  homœopathic, 347
  Mialhe's 346
  Peruvian, 347
  quinine, 346
  rose, 348
Trade secrets, 84
Transparent soap, 279
Triple extrait de rose, 153
Tuberose, 165
  extract, 165
Tulip nosegay, 237
Turkish hair dye, 326
Tutoring the olfactory nerve, 234
Twin rose, 153

Vanilla, 166
  extract of, 167
  quantity imported, 167
Veins, blue for, 340
Verbena or lemon-grass, 115
  true, 168
Verveine, 168
  extract, 168
  sachet, 247
Vinaigre de Cologne, 214
  à la rose, 212
Vinegar, aromatic, 211
  cosmetic, 214
Vinegar, four thieves', 213
  Henry's, 211
  hygienic, 213
  violette, 214
Violet, 169
  essence, 171
    imitation, 172
    wood, 237
  farms, 170
  otto of, 170
  pomade, 171
  sachet, 248
Virginal, lait, 293
Vitivert, 172
  essence, 172
  otto of, 173
  sachet, 247
Volkameria, 173
Volunteers' garland, 238

Wall-flower, 173
  essence, 174
Washed pomatum, 89
Water, Athenian, 352
  dill, 95
  elder, 97
  Hungary, 155
  lavender, 112
  Lisbon, 133
  myrtle, 122
  orange, 127
  pencil, 329
  rose, 152
  rosemary, 351
  walnut, 329
Water-cosmetic, 317
West End bouquet, 238
Wet bottles, evil of, 133
White rose, 154
Windsor soap, 271
  musk, 202
Winter-green, 174
  Iceland, 175
Woodbine, 103
Wood violet, 237

Yacht Club bouquet, 238
Yasmyn, 105

HDI
HW 1ZZD 0